# MARINE REVIEW.

VOL. X. CLEVELAND, O., AUGUST 23, 1894. No. 8.

## Congress and the Lake Carriers' Association.

Another session of congress is at an end, and in one important particular the vessel owners of the lakes have learned a lesson. However much the expense of maintaining the Lake Carriers' Association may be regarded by some owners as burdensome, it is certain that at the next annual meeting arrangements should be made for having proper representation in Washington throughout the sessions of congress. This should be done either through providing a plan that will permit of the secretary of the association being at the capital during the greater part of each session, or through engaging some one who is thoroughly familiar with all the details of legislation pertaining to the lakes. To any one acquainted with the interests affected by river and harbor improvements and the great variety of legislation pertaining to the shipping business, there is nothing that savors of the practice of the lobbyist in this suggestion, which comes from leading vessel owners, who have in view only the best interests of the entire lake marine.

But before referring to the disadvantage of not having representation of this kind in Washington, it will be of interest to sum up appropriations for the lakes that have been secured in the session that closed last week as far as appropriations are concerned. They are as follows:

| | |
|---|---|
| River and harbor improvements in river and harbor bill | $2,064,000.00 |
| River and harbor improvements, continuous contract system, in sundry civil appropriation bill | 477,000.00 |
| Lights, fog signals, etc., in civil sundry appropriation bill | 153,033,94 |
| Revenue cutter for lake service | 75,000,00 |
| Total of all appropriations | $2,769,033,94 |

Detailed statements of the various items making up the foregoing totals have appeared in previous issues of the REVIEW.

As regards the total of $2,064,000 obtained for the lakes in the river and harbor bill proper, which carried for all parts of the country appropriations aggregating about $12,000,000, there is no cause for complaint, but the sundry civil appropriation bill places the whole subject of the distribution of appropriations in a different light. This latter bill carries no less than $8,850,000 under the continuous contract system for works at Philadelphia, Galveston and on the Mississippi and Missouri rivers, while only two items in it—those for the St. Mary's river work, amounting to $450,000—apply to the lakes. Of course it must be admitted that this sum of $450,000 is all that is needed for carrying on the big lake improvements that are now nearing completion, but while appropriating such a vast sum of money for the Mississippi and Missouri rivers it does seem that the part of this bill pertaining to lights, fog signals, etc., should contain more than $153,033 for a long list of aids to navigation that have been authorized for the lakes.

With such comparisons in view lake vessel owners should have no hesitancy in demanding another St Clair canal or any of the projected improvements that have been delayed on account of the Sault canal and Hay lake channel works. Congressmen from the various lake districts pay attention to appropriations for harbors under their special charge, but legislation of the general kind, especially such as pertains to the lighthouse service and matters like the raft towing regulations, in which the efforts of the vessel owners in this session were overturned by a single move on the part of General Alger, need watchful and careful attention in the committees of congress.

## "Plungers" in the Freight Market.

With the improved instruments of the long distance telephone service in offices of all the leading vessel brokers on the lakes, and with the telegraph companies in places like Buffalo, Chicago, Detroit and Cleveland giving special attention to marine business, on account of competition from the telephones, some rapid work in the way of chartering vessels has been noted on a few occasions this season when the market was bulged a little.

"I will give 65 cents for ten or twelve big steamers" said a representative of one of the largest ore shipping firms in Cleveland, as he walked into the office of a vessel broker Monday. The telephone was started and a big batch of telegrams sent out, but the boats were not forthcoming, although the rate offered represented an advance of 5 cents on ore from the head of Lake Superior.

Of course the failure to secure boats at the rate offered did not necessarily mean that there was any great boom in the market, but ore shippers wanting boats to load at the head of the lakes had for a long time held to a 60-cent rate and the boats had drifted to engagements for Duluth grain, or had found shippers with whom they had contracts ready to provide ore for them a little in advance of the time specified for installments on their contracts.

It is in times like these that the "plungers," or the representatives of the larger ore companies, get in their work. Seeing that the market is certain to advance 5 cents, and possibly more, any of them having a large quantity of ore in dock at upper lake ports may jump in and take a big block of tonnage at the first advance, securing the pick of big steamers,and then rest until conditions are more settled. The shipper who does this takes little chance of reaching above the market, and in some cases secures an advantage over his competitors, who may be compelled to pay a still further advance on account of his action in cleaning up the market.

This trick is played usually when there are indications of improvement in grain shipments. It is not a new practice but it has occurred oftener of late than in previous seasons when no one concern, either in the shipping or vessel brokerage line, could produce or care for more than a few big vessels at a time. The same shipper that failed to corral a big block of tonnage on the 65-cent offer, secured eighteen big steamers in one day by a similar movement early in the season, when conditions were about the same as those prevailing early this week. He also tried the scheme on an offer of 70 cents Wednesday but was unsuccessful.

## Questions Determined by the St. Clair Tunnel.

Several important questions regarding railway tunnels have been determined in the operation for two years past of the big tunnel under the St. Clair river at Port Huron. A great deal of attention was given to the subject of ventilation but this has been secured through the motion of the trains which are drawn by powerful locomotives built specially for the purpose and belonging to the tunnel company. These big engines, drawing eighteen loaded cars, create sufficient draft to provide ample ventilation. But the wisdom of the projectors of the enterprise is best shown in the size of tunnel decided upon. It was at first proposed to build the tunnel wide enough for two tracks. A single track tunnel was decided upon, mainly from the fact that it would be sooner available for traffic, and it has since been found that two single track tunnels will be cheaper in the end, and that the second one will not be required for a long time. The largest number of freight cars passed through in twenty-four hours during the two years the tunnel has been in use was 1,015, while 2,500 could be handled if occasion required. The average number is 700 in winter and 500 in summer. This is in addition to passenger trains.

The actual length of this tunnel, from portal to portal, is 6,026 feet. Of this 2,310 feet is under the river, 1,982 feet under dry ground on the Canada side, and 1,734 feet under dry ground on the United States side. The open excavation to reach the ground level on the Canadian side is 3,061 feet, and on the United States side 2,466 feet. The grade is one in fifty, except under the river, where it is practically level, only sufficient incline—one-tenth per cent.—being given toward the Canadian side to provide for drainage. The depth of the lowest part under the mean level of the river is 77.83 feet. The minimum depth between the top of the tube and the bottom of the river is 15 feet, the average being 25 feet. It was necessary to place it as far down as possible in the clay, consistent with the grade, so as to overcome the tendency of a tube filled with air to rise to the surface in water or mud. The bottom is about 9 feet above the rock which underlies the clay. On the Canada side the bottom is 60 feet below the surface of the ground at the portal, and on the United States side it is 8 feet less. The bottom of the tunnel at its lowest point is 100 feet below the railway track on the level, which indicates the total ascent and descent which trains have to make in passing through. The track in the tube is supported on solid brickwork.

Notwithstanding the fate of the big sailing ship Marie Rickmers, another German ship owner, the well known Lalisz of Hamburg, is having constructed at Bremerhaven a steel ship 365 feet long, 50 feet beam, 31½ feet hold and of 4,280 tons. She will be 500 tons larger than the France and much bigger than any metal sailing vessel afloat.

## Illustrated Patent Record.

SELECTED ABSTRACTS OF SPECIFICATIONS OF A MARINE NATURE—FROM LATEST PATENT OFFICE REPORTS.

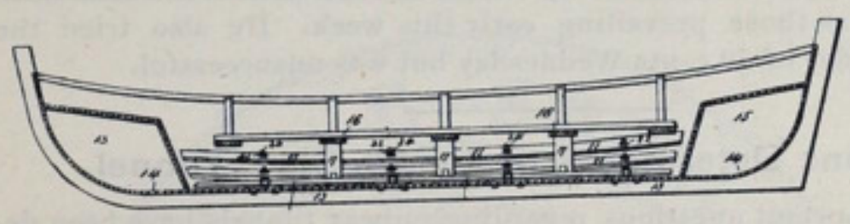
**524,350. REMOVABLE CENTER AND BILGE KEELSON FOR METALLIC LIFE BOATS, ETC. Lewis H. Raymond, Brooklyn, N. Y. Filed Nov. 17, 1893. Serial No. 491,283. (No model).**

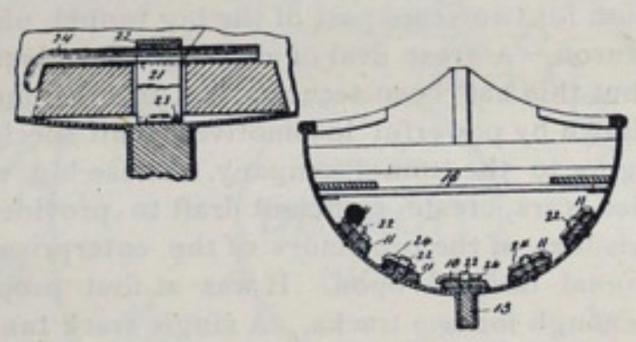
Claim: First, the center and bilge keelsons for metallic life and other metal boats, provided with a series of apertures, clips fastened to the hulls of said boats, and entering said apertures in combination with pins adapted to removably lock the said clips and keelsons together substantially. Second, the combination of a clip for metallic life and other metal boats having an arched section and flanges for fastening the said clips to the hull of a vessel, of center and bilge keelsons provided with apertures adapted to receive the arched section of said clips, and locking pins engaging the arched sections of clips and the keelsons.

**524,500. SCREW PROPELLER. Stetson G. Hindes, San Fra cl co. C l. Filed Dec. 20, 1893. Serial No. 494 157. (No model).**

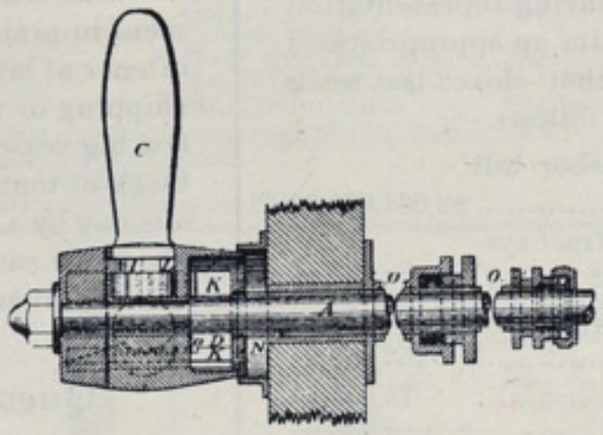
Claim: In a propeller, the combination of the propeller-shaft, the hub thereon, consisting of a main section having a series of cylindrical sockets therein and a detachable section having a series of concave lugs that enter said sockets, a series of blades having cylindrical stems entering said sockets, said stems having annular grooves that are engaged by the aforesaid lugs and having also at their inner ends a series of teeth, the endwise movable racks located in rectangular seats in the hub and engaging said teeth, the follower-plate to which the racks are attached, the sheath or tube surrounding the propeller-shaft and attached to the follower-plate, and operating mechanism for moving said tube.

524,350. REMOVABLE CENTER AND BILGE KEELSON

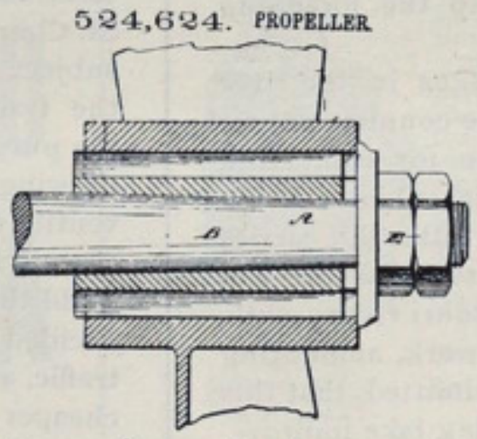




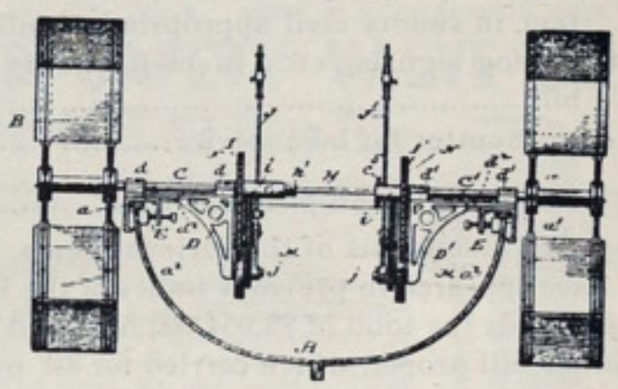
524,500. SCREW-PROPELLER



524,624. PROPELLER



524,629. BOAT-PROPELLING MECHANISM.



**524,624. PROPELLER. Daniel H. Welch and James L. Lovell, Astoria, Oreg. Filed July 20, 1893. Serial No. 481,030. (No model).**

Claim: An improvement in propellers consisting of the shaft having a tapered portion, the hub fitted on said portion and having dovetail seats extending in a direction parallel to the axis of the hub and tapering from end to end enlarging toward the rear ends, the propeller blades having their base portions provided with longitudinal taped dovetail seats fitted to those of the hub, the washer fitted on the shaft and bearing against the rear ends of the base portions of the several blades, and devices whereby the said washer is pressed against the said blades and the hub is tightened on the tapering portion of the shaft.

**524,629. BOAT PROPELLING MECHANISM. Allan H. Bacon, Webster Groves, Mo. Filed Sept. 25, 1893. Serial No. 486,429. (No Model).**

Claim: First, in a boat propelling mechanism, the combination with the clamp consisting of the top having a slot therein, the downwardly depending arms, one of which is formed with an inwardly projecting flange, and the clamp screw, of the bolt passing through said slot, the plumber block connected therewith, the rotatable wedge shaped washers interposed between said clamp and plumber block, and the paddle shaft and paddles. Second, the combination of the plumber-block, the pivoted lever J, the crank-shaft, the sprocket wheel on said shaft, the pitman connecting said lever to the shaft, the wheel-shaft, the sprocket wheel on said shaft, the belt connecting said sprocket wheels, the fly wheel O, journaled upon a bearing *o*, upon said plumber block, the fly wheel pulley, and the belt P, leading to crank L, whereby said fly wheel is operated when the lever J is moved.

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Capt. James Hogie, who was in the steamer Albert Soper, is the new assistant inspector of hulls at Chicago, appointed a few days ago.

## Lake Freight Matters.

In Cleveland, Wednesday, sixteen telegrams sent out by one firm of vessel brokers,and offering 75 cents on ore from the head of Lake Superior, failed to secure a single boat, although the rate was 15 cents above that offered three days previous. The work of all the brokers, who had been spurred on to special activity by the advanced freights, resulted in only seven boats being chartered for ore, and they were all obtained from one owner, Mr. M. A. Bradley. After refusing for several days the demands of vessel owners for a higher rate on ore from Ashland and adjacent ports, the ore shippers suddenly found that the delay caused through the great bulk of the fleet of wild boats being directed of Lake Superior, and all of them taking coal,had been far greater than was expected,and this, coupled with a little splurge in the grain movement out of Duluth,had tied up the tonnage, so that it was not a question of rates but one of securing boats.

On the question of the advance being permanent there is, of course, a variance of opinion. For the present, at least, it may be said that the increased freight is not due to the little competition from grain shippers. It results from a general demand among shippers having ore to move from the head of the lakes and who are somewhat behind on the movement planned in connection with contracts. A continuance of heavy shipments of soft coal, together with a moderate movement of grain, will probably be sufficient to cause a scarcity of boats in the ore trade, but there is as yet little upon which to base ideas of very high freights. Ore docks are becoming crowded, as a result of the delay in forwarding ore to furnaces during the several months of idleness on account of the coal and coke strikes, and for several days past the supply of boats taking coal for Lake Superior has been fully equal to the demand. If values of grain have really reached bottom and there is to be a fair movement for export, then vessel owners may take some encouragement from the actual business that is in sight in other lines.

## The Chapin Mine.

R. C. Flannigan, trustee of the Chapin mine, has issued a full statement of the affairs of the company since its property was turned over to him a year ago, and gives notice that the mine will be sold Oct. 15 under a foreclosure of the mortgage covering bonds that were issued after the Schlesinger failure. A meeting of the stockholders is to be held in Milwaukee on Sept. 3, but of course this will amount to nothing as the bondholders are in control. There is no telling what may be done among the railway companies and other holders of the bonds before the date fixed for the sale, but as the bond holders outside of M. A. Hanna & Co. of Cleveland have done practically nothing toward saving the mine from becoming a total loss, and as the Cleveland firm is the principal creditor, it is more than probable that a clear title to the property will be bought in by M. A. Hanna & Co.,and mining operations continued under arrangements that will include a satisfactory understanding with C. A. Chapin of Niles, Mich., the owner of the fee.

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At Point au Pins, just above the Sault, Kirkwood, Lennon & Co. have established a pleasure resort with a stone hotel, new store, park, etc., and have built in connection with the grounds a dock 200 feet long with 20 feet of water all around it. They propose to keep a supply of fuel, and will in future have the dock lighted by night and a bell sounded in thick weather. Masters of vessels finding themselves in this locality during thick and unfavorable weather of any kind are invited to take advantage of the accommodations offered.

## Minnesota Company's Steel Tow Barges.

An engraving showing the general arrangement of the new tow barges to be built by the Chicago Ship Building Company for the Minnesota Iron Company, and for which keels will be laid this week, appears herewith. The boats (there will be two of them) are intended to carry 3,000 tons of ore on 14 feet 6 inches draft. They will be 302 feet keel, 40 feet beam and 24 feet deep; are to have a water bottom 4½ feet deep, four bulkheads, and to be fitted with donkey boiler, steam windlass and capstan forward, steam capstan aft, steam steerer, deck hoister, ballast pump, and electric light plant, both arc and incandescent lamps. No main deck will be laid on the beams, except forward in the windlass room and deck hands' quarters and aft where the boiler and engine room and remainder of crews' quarters will be. A feature of the equipment will be the steam towing machines indicated in the drawing, and which are described elsewhere in this issue. These boats will be built under special survey for class in the United States Standard Register.

## Not Making Patent Claims.

EDITOR MARINE REVIEW:—Observing your comments on Mr. Stratton's patented improvements in ship construction, in which you also refer to plans proposed by me, permit me to draw your attention to an important distinction. I did not patent my propositions, nor do I claim them as my invention. I quite agree with the remarks of the naval architect quoted by you, and my only object in publishing my plans was to show that no valid patent claims can be maintained on such and similar plans.

Philadelphia, Pa., Aug. 17, 1894. JOHN HAUG.

## Making Compass Corrections.

Capt. J. A. Holmes of the Bradley line steamer Alva seems to be taking advantage of the book of azimuth tables published by the hydrographic office for use on the lakes. He says in a letter to the Washington office: "I can at any time the sun is visible correct my compass on any course in less than five minutes and with perfect confidence make the indicated change in course, which is of the utmost importance on metal boats, as on these boats the compasses are constantly changing."

Capt. Thomas Murphy of Detroit, who has ordered the wrecking steamer Johnson to Dunkirk, Lake Erie, to search for the wreck of the steamer Dean Richmond, is not over confident regarding success with the undertaking. The lake will be carefully surveyed and then the Johnson with another tug will begin dragging the bottom. They will have a hawser 4,000 feet long, one tug taking one end of the line and the second tug the other end. In this way they will sweep the bottom of the lake. The space thus dragged will be buoyed. Directly off shore there are many boulders but it is thought that beyond a depth of 20 fathoms the bottom is without a flaw, even slate. The work is being done for the underwriters.

The most convenient train for the west is the fast express via the Nickel Plate road, known as No. 5, leaving Cleveland 11:12 a. m., daily including Sunday, and stops at Bellevue, Fostoria and Ft. Wayne, arriving at Chicago at 9:35 p. m. Palace buffet sleeping cars attached. 20-131

## Stocks of Grain at Lake Ports.

The following table, prepared from reports of the Chicago board of trade, shows the stock of wheat and corn in store at the principal points of accumulation on the lakes on August 18, 1894:

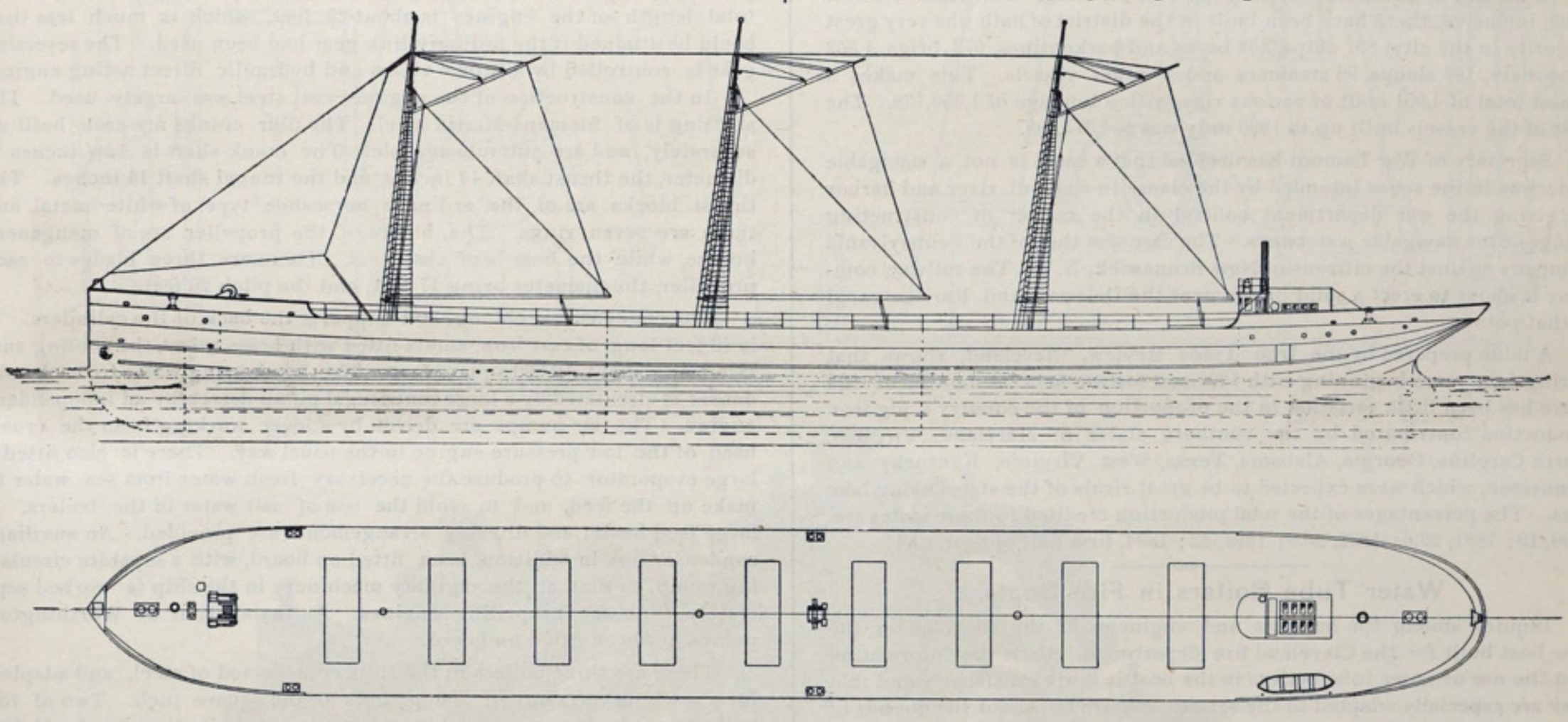
| | Wheat, bu. | Corn, bu. |
|---|---|---|
| Chicago | 22,398,000 | 1,178,000 |
| Duluth | 2,922,000 | ..... |
| Milwaukee | 749,000 | ..... |
| Detroit | 1,472,000 | 6,000 |
| Toledo | 3,112,000 | 28,000 |
| Buffalo | 1,534,000 | 153,000 |
| Total | 32,187,000 | 1,365,000 |

At the points named there is a net increase for the week of 1,649,000 bushels of wheat, and a net decrease of 254,000 bushels of corn.

## Miscellaneous Mention.

A trial of especially prepared West Virginia coke as a smokeless fuel will be made on the U. S. S. Dolphin when Secretary Herbert makes a tour shortly of Atlantic coast navy yards in that ship.

Capt. Henry Stone of the Lake Superior Iron Company's steamer La-Salle makes no charge of defect in the Hay lake channel on account of the grounding of his steamer. He was out of the channel as a result of a misunderstanding regarding the targets.



GENERAL ARRANGEMENT OF MINNESOTA STEAMSHIP COMPANY'S NEW TOW BARGES.

All previous records with the McMyler car dumping machine at Ashtabula were outstripped Wednesday, when 155 cars, aggregating 3,726 tons, were loaded into the steel steamer Kearsage and the boat gotten out with the reguar single day's work.

Under the last naval programme Great Britain is building ten battleships of the first-class, two first-class and nine second-class cruisers, two sloops and thirty-six torpedo boat destroyers. Battle ships like the Hood and her consorts, which are concluded in this summary, will cost about $4,575,000.

On account of reverses met by David Bell of Buffalo, who has been constructing a revenue vessel, the Calumet, intended for service at the port of Chicago, the boat was about forgotten among new government ships. She is to have a final trial in a few days now, and will soon be ready to be turned over to the Chicago collector of customs.

With $200,000 appropriated by the recent naval act work will be begun shortly at the New York navy yard on new triple expansion engines and new boilers for the cruiser Chicago, that are to cost about $500,000. The design for the engines is said to exhibit a number of novelties. One-half of the boilers will be on the coil water tube system, and the other half of Scotch type. It will take two years to build them, and they are expected to make the Chicago a 20-knot boat. The three new torpedo boats to be built this year will be similar to the Ericsson, the limited appropriation not being considered sufficient to pay for a vessel as large as the sea-going 220-ton boats of the British Hornet type. Several improvements will be made on the Ericsson design, the displacement of the new vessel being 120 or 125 tons, with increased engine power and roominess. The speed will be 25 knots per hour.

## In General.

Under the title of "Where the Breakers Roar," S. H. Ferris writes interestingly about the United States life saving service in the September number of Frank Leslie's Popular Monthly.

The twenty-third annual meeting of the National Board of Steam Navigation will be held in Cincinnati, Sept. 11. This organization is made up largely of owners of vessel property navigating the western rivers and the Atlantic coast.

Charles F. Rand is now president and treasurer of the Aurora Iron Mining Company. Both Charles L. and Joseph L. Colby have resigned active positions in the management of the affairs of the company, although they are still members of the board of directors.

On her last trip eastward, the big Cunard greyhound Campania again broke all previous Atlantic records by 3 hours and 18 minutes, making the run in 5 days, 9 hours and 29 minutes. The best previous record was that of the Lucania, made in October last, which was 5 days, 12 hours and 47 minutes.

The Harlan & Hollingsworth Company, Wilmington, Del., has secured a contract from the Merchants' and Miners' Transportation Company of Baltimore to build for them another steamer that is to be 270 feet long, 67 feet beam and 34 feet deep, and intended for service between Baltimore and Boston.

A history of Bath, Me., recently published, states that from 1781 to 1892, inclusive, there have been built in the district of Bath (the very great majority in the city) 897 ships, 858 barks and barkentines, 673 brigs, 1,352 schooners, 166 sloops, 96 steamers and 9 other vessels. This makes a grand total of 4,051 craft of various rigs, with a tonnage of 1,350,138. The cost of the vessels built up to 1890 only was $54,375,809.

Secretary of War Lamont has decided that a canal is not a navigable waterway in the sense intended by the clause in a recent river and harbor act giving the war department control in the matter of constructing bridges over navigable waterways. The case was that of the Pennsylvania Company against the citizens of New Brunswick, N. J. The railway company is about to erect a solid bridge over the Delaware and Raritan canal at that point.

A table prepared by the Iron Trade Review, Cleveland, shows that during four years beginning with 1890 and for the first six months of 1894 there has been little variation in the proportion of the country's pig iron production contributed by the southern states of Maryland, Virginia, North Carolina, Georgia, Alabama, Texas, West Virginia, Kentucky and Tennessee, which were expected to be great rivals of the states using lake ores. The percentages of the total production credited to these states are: 1890, 19; 1891, 20.6; 1892, 20.6; 1893, 22; 1894, first half of year, 21.1.

## Water Tube Boilers in Fire Boats.

Inquiry among the builders and engineers of the Clevelander, the new boat built for the Cleveland fire department, elicits the information that the use of water tube boilers in the boat is quite satisfactory and that they are especially adapted to the service required. About 100 pounds of steam is kept up all the time, and this is maintained even when all the pumping machinery is in use. Before the boat was hardly completed she was used at a seventeen-hour fire. With one pump the 3-inch nozzle was used to tear down the lumber piles, when eight 1¼-inch stream were used for the rest of the time. The steam produced and maintained was quite satisfactory. A Scotch boiler using river water for feed would get very dirty in a week's time, but the water tube boilers in the Clevelander had little or no sediment in them after being in use five weeks. Although the Clevelander has been in operation at a number of small fires, she has not had an opportunity since she was accepted by the department to show what she can do. Such an opportunity, barring the fire loss attending it, would please the firm of Thos. Manning, Jr., & Co. of Cleveland, builders of the boat, machinery and pumps, and would also be welcomed by the builders of the boilers, the Almy Water Tube Boiler Company of Providence, R. I.

## Engines of the International Liner Kensington.

The largest freight steamers in the world are the twin-screw steamers Kensington and Southwork, built recently on the other side for the International Navigation Company, which is closely associated with the old Inman and now the American line. These vessels are fitted with quadruple expansion engines and are in several other respects remarkable ships. Either of them will carry, for instance, 10,600 tons of cargo and at the same time 120 cabin passengers, while the Atlantic greyhounds seldom carry more than 2,000 tons of cargo and perhaps 600 cabin passengers. The duration of voyage in the freight steamer is, of course, longer than that of the "flyers," probably by 30 per cent., but the point to be determined is as to whether the capacity of the former will be more largely and more constantly utilized than the latter.

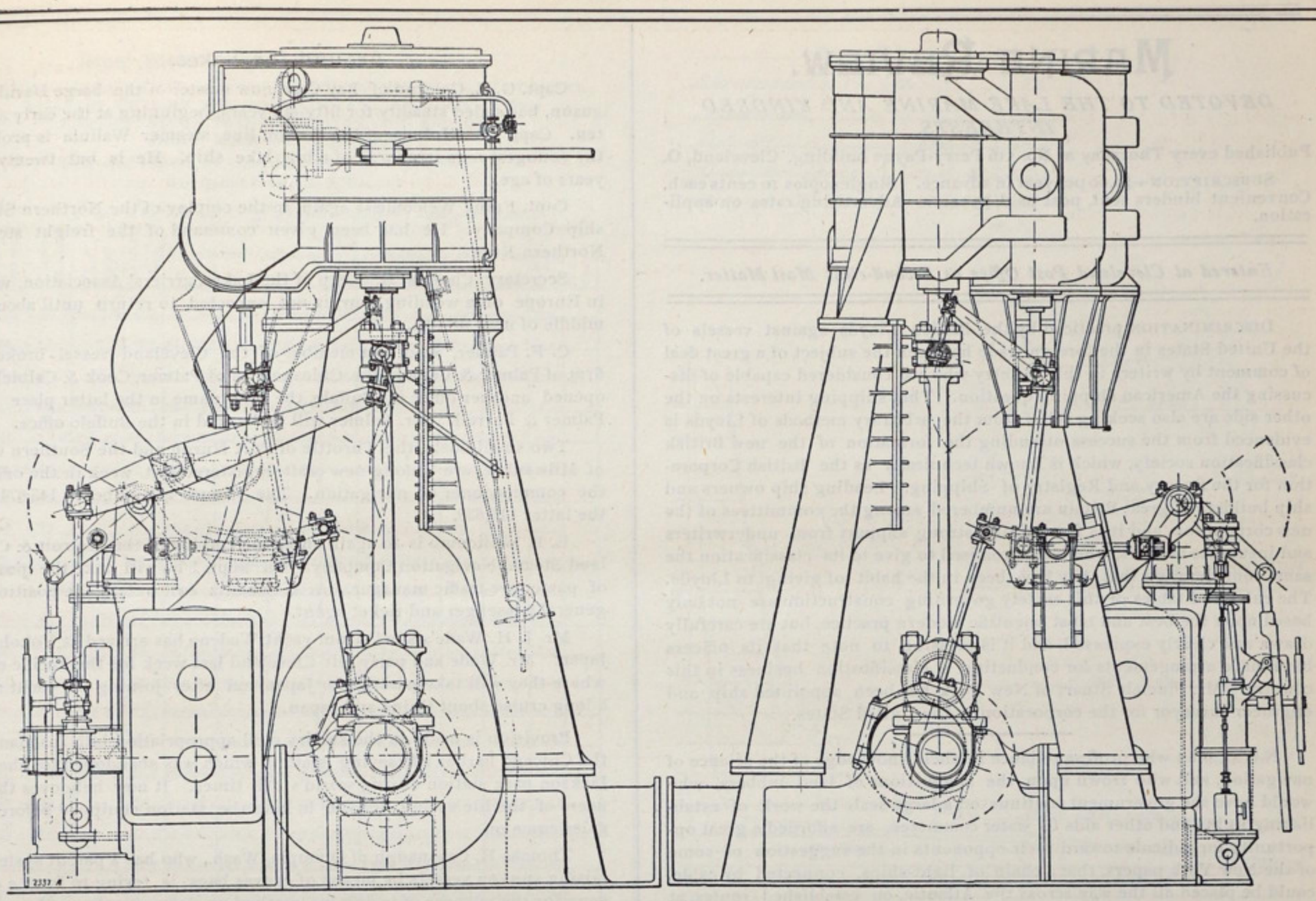
But a description of the machinery of these boats is probably of most interest to readers of the REVIEW, and this is afforded in a late issue of Engineering of London, which illustrates and describes the engines of the Kensington, built by Messrs. James and George Thompson, Clydebank, Glasgow. They are of the quadruple expansion type, direct acting and surface condensing. The four cylinders each work a separate crank and they are so arranged as to produce the minimum of vibration, the parts being so disposed as to be practically balanced without the use of counterweights. The order of the cylinders from the forward end is high pressure, second intermediate pressure, first intermediate pressure, low pressure. The sequence of turning is high pressure, low pressure, second intermediate, first intermediate. Cranks are at right angles to each other. Diameters of cylinders are as follows: High pressure, 25½ inches; first intermediate, 37½ inches; second intermediate, 52½ inches; low pressure, 74 inches, with a common stroke of 4 feet 6 inches. The high pressure and the two intermediate pressure cylinders are each fitted with piston valves and the low pressure has a double-ported flat valve. All valves are worked by a single eccentric radial valve gear. It is operated by a single eccentric through a quadrant rocking on trunnions. The reversing is obtained by moving the sliding block attached to the valve spindle from one end of the quadrant to the other. The lap and lead is secured by a separate lever worked from the crosshead of the main engine. This arrangement of valve motion allows of the valves of the engine being placed at the back, thereby bringing the centers of the cylinders much closer together and economising space in the engine compartment; and, of course adding to the cargo capacity in the ship. The total length of the engines is about 25 feet, which is much less than could be attained if the ordinary link gear had been used. The reversing gear is controlled by a Brown steam and hydraulic direct acting engine.

In the construction of the engines cast steel was largely used. The shafting is of Siemens-Martin steel. The four cranks are each built up separately, and are interchangeable. The crank-shaft is 14¾ inches in diameter, the thrust shaft 14 inches, and the tunnel shaft 14 inches. The thrust blocks are of the ordinary horseshoe type, of white metal, and there are seven rings. The blades of the propeller are of manganese bronze, while the boss is of cast steel. There are three blades to each propeller, the diameter being 17 feet, and the pitch 20 feet.

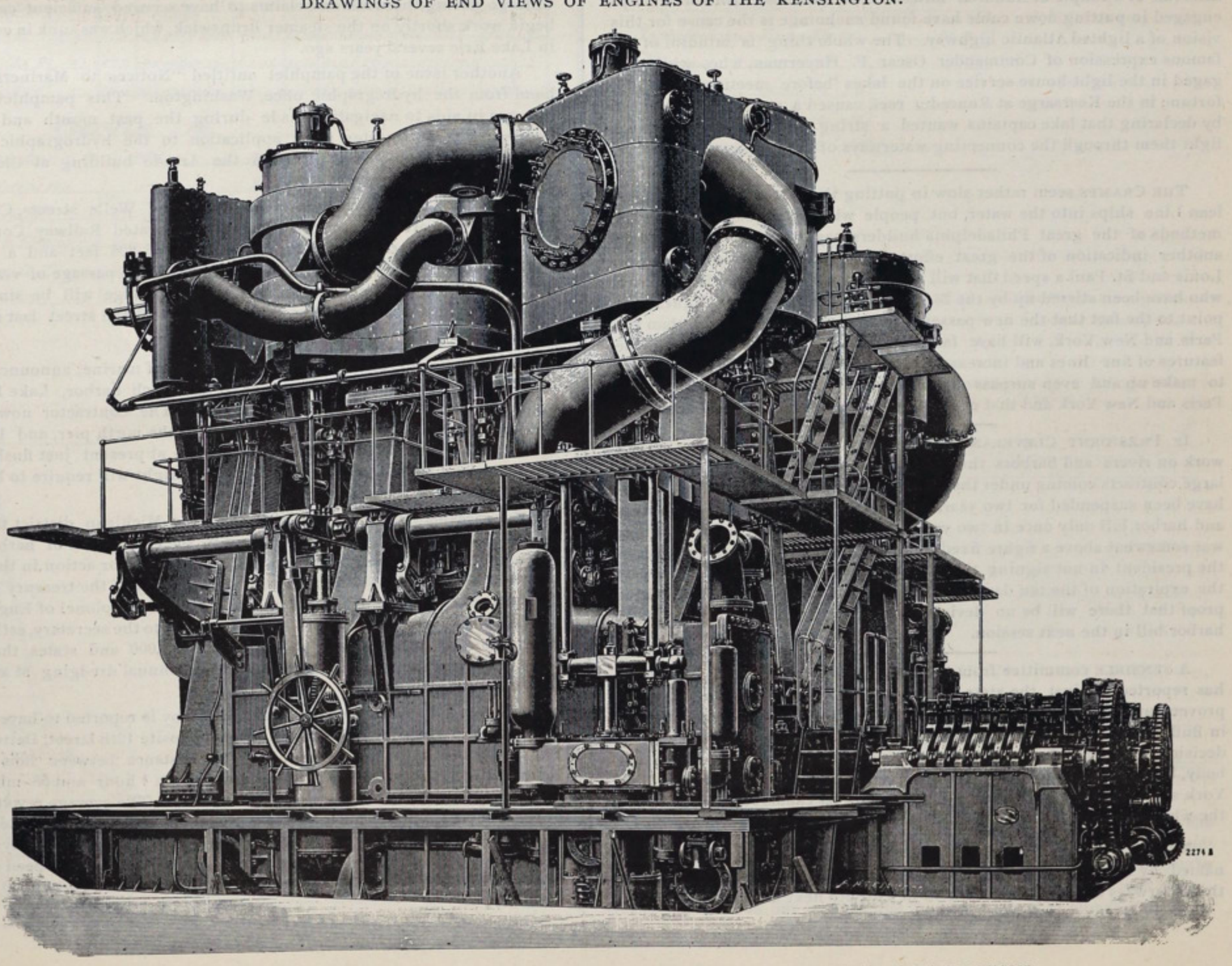
The condenser is oblong, and supports the back of the cylinders. It is 19 feet long, of cast iron, and is fitted with brass tubes, the cooling surface being about 10,000 square feet. The condensing water to each condenser is circulated by a large centrifugal pump driven by an independent engine. The air pumps are driven by a lever working from the crosshead of the low pressure engine in the usual way. There is also fitted a large evaporator to produce the necessary fresh water from sea water to make up the feed, and to avoid the use of salt water in the boilers. A large feed heater and filtering arrangements are provided. An auxiliary condenser has, in addition, been fitted on board, with a separate circulating pump, so that all the auxiliary machinery in the ship is worked separately from the propelling engines. An installation of Worthington pumps has been fitted on board.

There are three boilers in the ship, constructed of steel, and adapted for a working pressure of 200 pounds to the square inch. Two of the boilers are double-ended, and are 15 feet 9 inches in diameter by 21 feet 5 inches long, while the single-ended boiler is of the same diameter, but 11 feet 3 inches long. There are four furnaces at each end, making twenty in all, each with a Purves flue. These are 3 feet 4 inches mean diameter, the length of fire bar being 5 feet 9 inches. The total heating surface is 12,176 square feet, and the grate area is 383 square feet. The boilers are fitted with Serve tubes 3¼ inches in diameter, with 1⅜ inches spaces between. There is fitted also a system of induced draught. The boilers are in one compartment and exhaust into one chimney stack, which is 84 feet high from the grate level, and elliptical in plan, 14 feet by 9 feet. The fans are 7 feet 6 inches in diameter, and are driven direct by Sturtevant engines running under ordinary conditions at a speed of 370 revolutions. The fans induce a draught through the furnaces, the air having previously been heated by passing through tubes placed in the way of the waste gases from the furnaces. The inlet of air to the furnaces is through tubes placed in a casing over the boiler, thence down a passage in front of the smoke box at the end of the boilers, and into the furnaces. The gases from the furnace, after passing through the boiler, play around the tubes forming the air inlet, and subsequently pass into the funnel, at the base of which are the five fans inducing draught through the passages thus briefly indicated.

At the trials on the measured mile at Skelmorlie, the displacement of the vessel was 12,400 tons, the draught being, forward 21 feet 9 inches, aft 21 feet 7 inches and mean 21 feet 8 inches. Six runs were made, the mean results being as follows: Steam pressure, 199.5 pounds per square inch; air pressure in stoke hold, 3.16 inches; revolutions, port engine, 86.4; revolutions, starboard engine, 86.9; indicated horse power, both engines, 8,313; vacuum, 27 inches; speed, 15.8 knots. The temperature at the base of the funnel was about 550 degrees Fahr. On her first trip to Philadelphia the speed averaged 14.1 knots, and on the homeward run 13.7 knots, the indicated horse power being about 7,000.



DRAWINGS OF END VIEWS OF ENGINES OF THE KENSINGTON.



GENERAL VIEW OF TWIN-SCREW QUADRUPLE EXPANSION ENGINES OF THE KENSINGTON.

# MARINE REVIEW.

*DEVOTED TO THE LAKE MARINE AND KINDRED INTERESTS.*

Published every Thursday at No. 516 Perry-Payne building, Cleveland, O.

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DISCRIMINATION practiced by the British Lloyds against vessels of the United States in the foreign trade has been the subject of a great deal of comment by writers in this country who are considered capable of discussing the American shipping question. That shipping interests on the other side are also seeking relief from the arbitrary methods of Lloyds is evidenced from the success attending the formation of the new British classification society, which is known technically as the British Corporation for the Survey and Registry of Shipping. Leading ship owners and ship builders of great Britain are numbered among the committees of the new corporation, and it is fast gaining strong support from underwriters and insurance brokers, who have promised to give to its classification the same consideration that they have been in the habit of giving to Lloyds. The rules and tables of this society governing construction are not only based upon the best and most scientific modern practice, but are carefully drawn and clearly expressed, and it is pleasing to note that its officers have made arrangements for conducting a classification business in this country. Mr. Sinclair Stuart of New York has been appointed ship and engineer surveyor for the corporation in the United States.

NAVAL men who profess reliance in their knowledge of the science of navigation, and who frown upon the suggestions of land lubbers, who would have the government continue on a large scale the work of establishing lights and other aids to water commerce, are afforded a great opportunity for ridicule toward their opponents in the suggestion of some of the New York papers, that a chain of light-ships, connected by cable, could be placed all the way across the Atlantic, on established routes, at intervals of a couple of hundred miles. The readiness with which ships engaged in putting down cable have found anchorage is the cause for this vision of a lighted Atlantic highway. The whole thing is mindful of the famous expression of Commander Oscar F. Heyerman, who, while engaged in the light-house service on the lakes before meeting with misfortune in the Kearsarge at Roncador reef, caused a storm of indignation by declaring that lake captains wanted a string of Chinese lanterns to light them through the connecting waterways of the lakes.

THE CRAMPS seem rather slow in putting the first of the new American Line ships into the water, but people who are acquainted with the methods of the great Philadelphia builders say that the delay is only another indication of the great effort being made to secure in the St. Louis and St. Paul a speed that will surpass anything afloat. Enthusiasts who have been stirred up by the 23-knot performance of the Minneapolis point to the fact that the new passenger ships, although smaller than the Paris and New York, will have far greater power, and that through the features of fine lines and increased power the American builders expect to make up and even surpass the difference between the speed of the Paris and New York and that of the Cunarder's Campania and Lucania.

IF PRESIDENT CLEVELAND had vetoed the river and harbor bill all work on rivers and harbors throughout the country, excepting the few large contracts coming under the continuous appropriation system, would have been suspended for two years, as it is the custom to prepare a river and harbor bill only once in two years. The aggregate of appropriations was somewhat above a figure fixed by the administration, hence the act of the president in not signing the bill but allowing it to become a law by the expiration of the ten days time limit. This may be taken as positive proof that there will be no deviation from the custom and no river and harbor bill in the next session.

A SENSIBLE committee from the New York constitutional convention has reported against the state spending any more money on canal improvements that do not improve. Representatives of the canal interests in Buffalo and elsewhere are surprised and put out by the committee's decision and are endeavoring to overcome it in the general convention body, but whatever they may do will be of only temporary account. New York state can not afford to spend millions on its canals for the benefit of the whole country and should not be expected to do so.

MESSRS. Luther Allen, H. G. Dalton and M. A. Bradley have been named by Mayor Blee of Cleveland as delegates to represent the city in the waterways convention to be held in Toronto next month.

## Around the Lakes.

Capt. G. E. Galarno of Bay City, now master of the barge David Ferguson, has sailed steadily for fifty-six years, beginning at the early age of ten. Capt. J. C. Holmes of the Wilson line steamer Wallula is probably the youngest man in charge of a big lake ship. He is but twenty-four years of age.

Capt. Frank Welcome is again in the employ of the Northern Steamship Company. He has been given command of the freight steamer Northern King.

Secretary Charles H. Keep of the Lake Carriers' Association, who is in Europe on a wedding tour, is not expected to return until about the middle of next month.

C. F. Palmer, who is a member of the Cleveland vessel brokerage firm of Palmer & Co. and the Chicago firm of Palmer, Cook & Calbick has opened another office in Buffalo, the firm name in the latter place to be Palmer & Farrell. Mr. Palmer will be located in the Buffalo office.

Two small boats, the Throttle of Port Huron and the Southern Cross of Milwaukee, are among new craft registered last week in the office of the commissioner of navigation. The former is numbered 145,674 and the latter 116,639.

E. B. Whitcomb is to again enter the employ of the Detroit & Cleveland Steam Navigation Company. On Sept. 1 he will take the position of passenger traffic manager. A. A. Schantz will retain the position of general passenger and ticket agent.

Mr. J. H. Wade's steel steam yacht Wadena has arrived at Yokohama, Japan. Mr. Wade and party left Cleveland last week for the Pacific coast, where they will take passage for Japan and after joining the yacht make a long cruise about China and Japan.

Provision is made in the sundry civil appropriation bill for manning the Chicago harbor life saving station, which was abandoned for the new Jackson park station during world's fair times. It now behooves the officers of the life saving service to have the station equipped before fall gales come on.

Thomas H. Cavanaugh of Olympia, Wash,, who has a patent system of raising sunken vessels by means of canvas bags, is trying to form a company for the purpose of trying his method on lake wrecks. He was in Chicago during the week and claims to have secured sufficient capital to begin work shortly on the steamer Brunswick, which was sunk in collision in Lake Erie several years ago.

Another issue of the pamphlet entitled "Notices to Mariners," is at hand from the hydrographic offce, Washington. This pamphlet notes changes in aids to navigation made during the past month and can be had by any vessel master upon application to the hydrographic office, Washington, or the branch offices in the Arcade building at Cleveland and Masonic Temple at Chicago.

Plans for a tower bridge between Clark and Wells streets, Chicago, have been prepared by the Northwestern Elevated Railway Company. They call for a structure with a single span of 206 feet and a height above the water when the bridge is opened for the passage of vessels of 155 feet. The general construction of the new bridge will be similar to the tower bridge opened by the city at South Halsted street last spring. Its cost will be over $1,000,000.

William Smith, Canadian deputy minister of marine, announces that the breakwater piers at the entrance to Goderich harbor, Lake Huron, are being extended further into the lake. The contractor now has a length of about 300 feet added to the end of the north pier, and 110 feet to the end of the south pier. The cribs are at present just flush with the water, and vessels entering the harbor at night will require to be very careful not to collide with these cribs.

Congressman Thomas, who represents the Michigan district that includes the port of Saugatuck, is looking to the completion of harbor improvements at that point. In order to be prepared for action in the next congress he has secured a report from the secretary of the treasury giving details as to the plans for improvement. Lieutenant Colonel of Engineers G. J. Lydecker of Detroit, who makes the report to the secretary, estimates the cost of the improvement proposed at $260,000 and states that the maintenance of the improvements call for an annual dredging at an estimated cost of about $3,000.

The fast side-wheel steamer Frank E. Kirby is reported to have made the run, on Wednesday of last week, from opposite 12th street, Detroit, to Put-in Bay in 2 hours and 55 minutes. The distance between Bois Blanc light and Put-in Bay, 35½ miles, was covered in 1 hour and 58 minutes. For nearly half this distance the water is shoal. The average revolutions of the wheels from Detroit to Middle Sister island was 32½. Between Middle Sister and Put-in Bay, where the water is as deep as it is anywhere at the head of Lake Erie, 34½ revolutions were made, and the speed of the boat during this part of the run is thought to have been close to 20 miles an hour.

## Steel Steamship Harvey H. Brown.

REPORT OF EXPERIMENTAL TRIP—MODERN COARSE FREIGHT STEAMER BUILT BY DETROIT DRY DOCK COMPANY AND OWNED BY NORTHWESTERN TRANSPORTATION COMPANY, DETROIT, MICH.—AUGUST, 1894.

*Test and report by Geo. C. Shepard, Cleveland, O.*

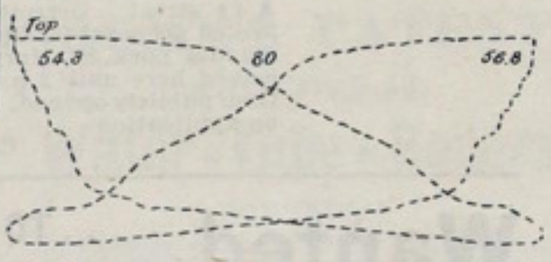
[Continued from Vol. X. No. 7]

### *Particulars of Indicator Diagrams.*

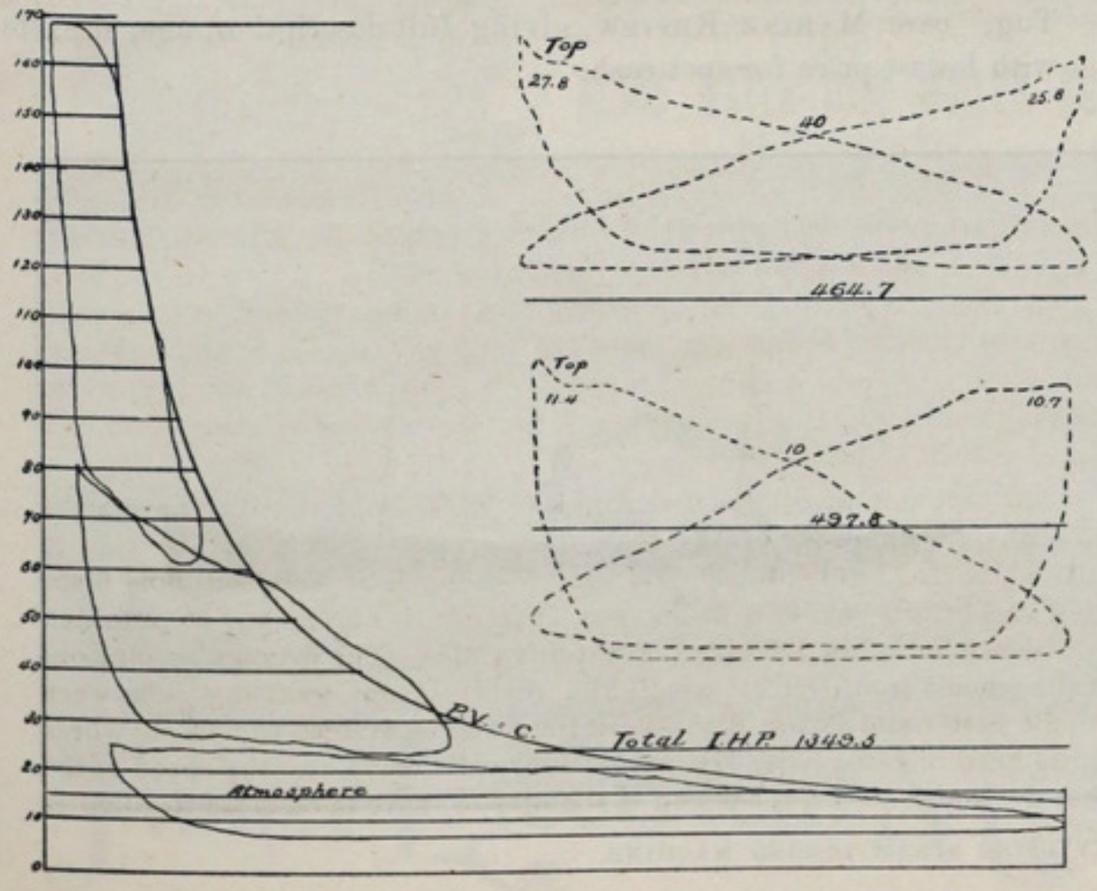
| Number | Steam Pressure | Inches Vacuum | Cut off | Revolutions Per Min. | Mean Effective Pressure HP | MP | LP | H.P. Reduced to L.P. | Indicated Horse Power HP | MP | LP | Total | I.H.P. on L.P. | Total Expansion |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 163.5 | 20.7 | 6½-2⅞-2¼ | 85 | 58-56 | 26.4-25.5 | 10.4-9.8 | 28.68 | 803.7 | 466.7 | 453.9 | 1324.3 | 11.6 | |
| 2 | 159 | 21 | " | 84 | 55.5-54 | 25.4-24.6 | 9.4-9.15 | 27.37 | 381.3 | 443.5 | 424.2 | 1249 | 13.4 | |
| 3 | 164.5 | 21.5 | " | 84.6 | 55.8-54 | 25.3-24.4 | 10.15-9.4 | 28.54 | 385.3 | 446.2 | 450.8 | 1280.4 | 13.3 | |
| 4 | 150 | 25.3 | 6½-1½-2 | 84 | 54.5-56 | 22.7-22.5 | 10.5-9.4 | 27.25 | 386.4 | 401.5 | 455 | 1243.1 | 12.44 | |
| 5 | 148 | 23.5 | 5-1½-2½ | 85.25 | 57.8-56 | 27-26 | 12.15-11.15 | 30.72 | 428 | 477.4 | 541.3 | 1442.7 | 11.36 | |
| 6 | 153.75 | 21.7 | 6½-4¾-3½ | 81.8 | 42.8-41.3 | 22-22 | 10.3-9.9 | 25.20 | 289.5 | 380.3 | 449.9 | 1119.7 | 12.5 | |
| 7 | 164.5 | 20.5 | " | 81.7 | 42.8-41.8 | 21.7-21.7 | 10.2-10.1 | 25.24 | 294.1 | 375 | 451.8 | 1120.9 | 12.15 | |
| 8 | 158 | 22 | " | 81.2 | 40.8-42.8 | 24.8-23.8 | 8.9-8.3 | 24.15 | 279.3 | 417.3 | 369 | 1065.6 | 12.15 | |
| 9 | 149.5 | 22 | " | 81 | 42.3-42.3 | 22.3-22 | 8.7-8.8 | 23.68 | 281.8 | 379 | 387.7 | 1048.5 | 11.73 | |
| 10 | 150.5 | 21.8 | " | 80.8 | 42.3-41.8 | 23.3-22.3 | 8.9-8.4 | 23.77 | 279.5 | 387 | 379.5 | 1043 | 11.8 | |
| 11 | 154.75 | 21.5 | 6½-2⅝-2⅜ | 82.3 | 56.8-55.4 | 27.3-25.3 | 11.3-10.2 | 29.82 | 461.7 | 457.5 | 482.2 | 1401.4 | 12.44 | |
| 13 | 160 | 19.5 | " | 82 | 52.3-52.3 | 25.8-24.3 | 10.-9.5 | 27.93 | 352.6 | 432.9 | 449.3 | 1234.8 | 11.73 | |
| 14 | 161 | 21.5 | " | 82.7 | 54.3-56.8 | 27.8-25.8 | 11.4-10.7 | 30.02 | 387 | 466.7 | 497.8 | 1349.5 | 11.26 | |
| 15 | 169.5 | 21.8 | 6⅝-3-0 | 87 | 63.3-63.1 | 27.3-24.3 | 10.6-9.6 | 30.88 | 459.3 | 492.3 | 478.6 | 1431.1 | 11.97 | |
| 17 | 172.5 | 22 | " | 88 | 66.3-66.3 | 28.8-26.6 | 10.7-9.7 | 30.94 | 479.6 | 510.4 | 489.2 | 1479.2 | 12.04 | |
| 19 | 159 | 21 | 6½-1½-2½ | 81.2 | 60.8-58.3 | 25.5-24 | 10.1-9.7 | 28.57 | 397.8 | 424.6 | 437.5 | 1259.9 | 11.6 | |
| 20 | 157 | 20.5 | " | 81.4 | 59.8-57.3 | 24.7-23.8 | 9.8-9.6 | 27.89 | 392.3 | 415.9 | 423.7 | 1233.9 | 11.78 | |
| 21 | 159 | 21 | " | 81.5 | 62.8-60.8 | 25.8-23.3 | 10.2-9.9 | 28.99 | 414.8 | 422.9 | 445.7 | 1283.4 | 11.57 | |
| 22 | 159 | 21.8 | " | 81.2 | 60.8-58.8 | 24.7-23.8 | 10.2-9.9 | 28.86 | 399.5 | 428.7 | 444.1 | 1272.3 | 11.45 | |
| 23 | 161 | 21.6 | " | 81.3 | 60.3-58.4 | 25.8-23.3 | 10.4-9.9 | 28.72 | 396.7 | 421.9 | 450.5 | 1269.1 | 11.38 | |
| 24 | 159 | 21 | " | 80.3 | 60.8-58.8 | 25.5-24.3 | 10.1-10.1 | 28.88 | 396.5 | 424.7 | 443.2 | 1264.5 | 11.31 | |
| 26 | 160 | 21 | 6½-2⅝-3 | 77.5 | 48.8-48.3 | 18.3-18.3 | 11.9-11.9 | 26.42 | 309.2 | 388.7 | 502.2 | 1112.1 | 10.56 | |
| 27 | 160 | 21.5 | " | 77.5 | 49.8-49.8 | 18-17.6 | 11.6-12.2 | 26.56 | 420.3 | 291.4 | 502.2 | 1109.8 | 11.17 | |
| 28 | 150 | 21.5 | " | 78.5 | 50.8-47.8 | 19.6-18 | 12.2-11.6 | 27.19 | 317.9 | 311.6 | 549.8 | 1179.2 | 10.13 | |

### Cards '14

| | | | |
|---|---|---|---|
| Revolutions Per Min., | 82.7 | | |
| Vacuum | 21.5 | | |
| | HP | MP | LP |
| Cut off | 6½ | 2⅝ | 2⅜ |
| Gage Pressures | 16.1 | 60.1 | 14 |
| Range in Temp. | 738° | 773° | 608° |

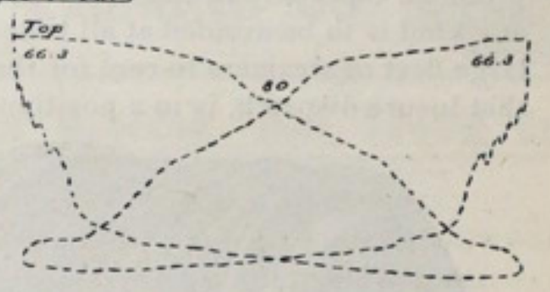



I.H.P. 387




### Cards '17

| | | | |
|---|---|---|---|
| Revolutions Per Min., | 88 | | |
| Vacuum, | 22" | | |
| Cut off | 6⅛ | 0 | 0 |
| Gage Pressures | 172.5 | 51 | 11.5 |
| Range in Temp. | 991° | 716° | 604 |

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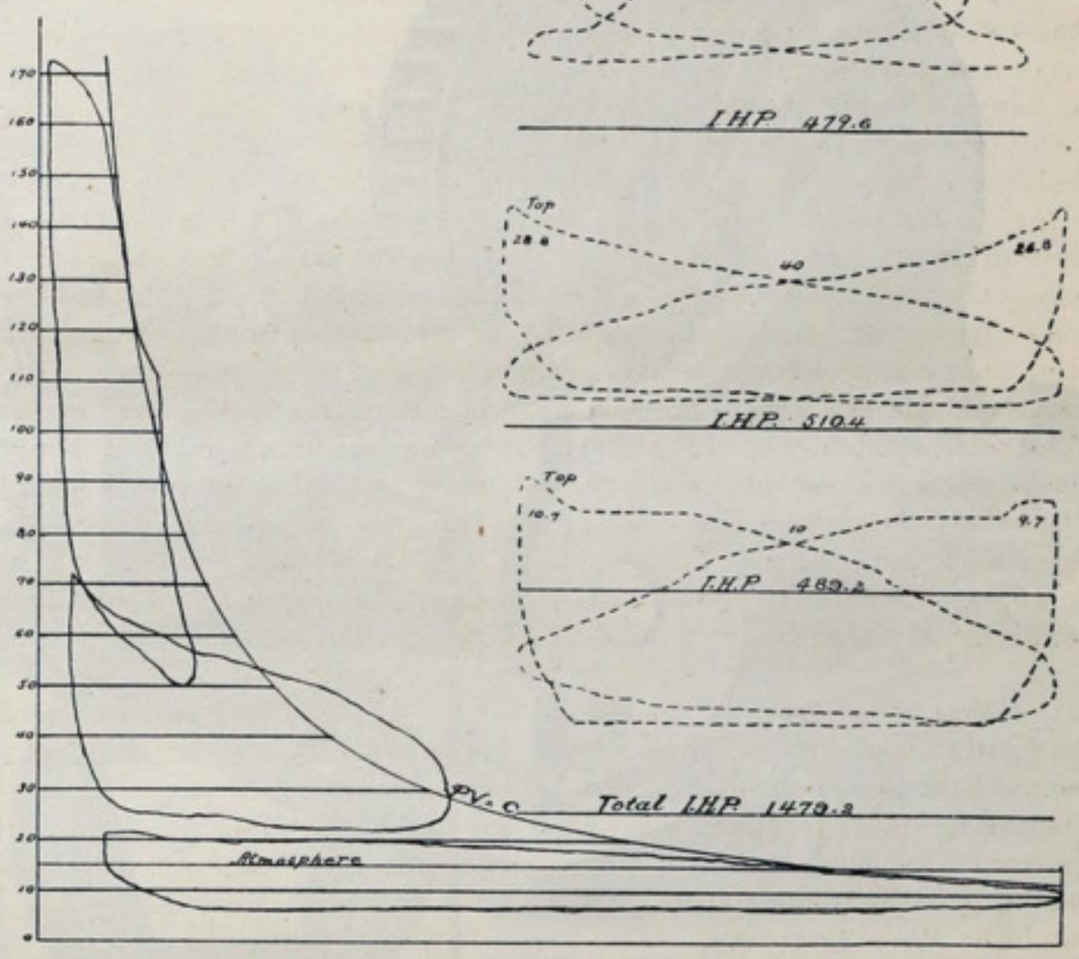
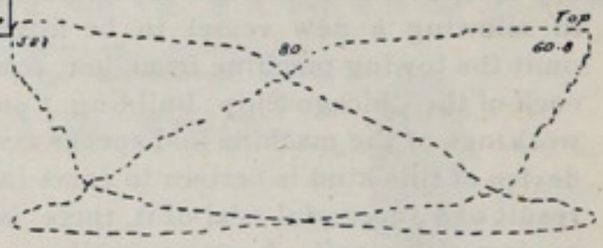
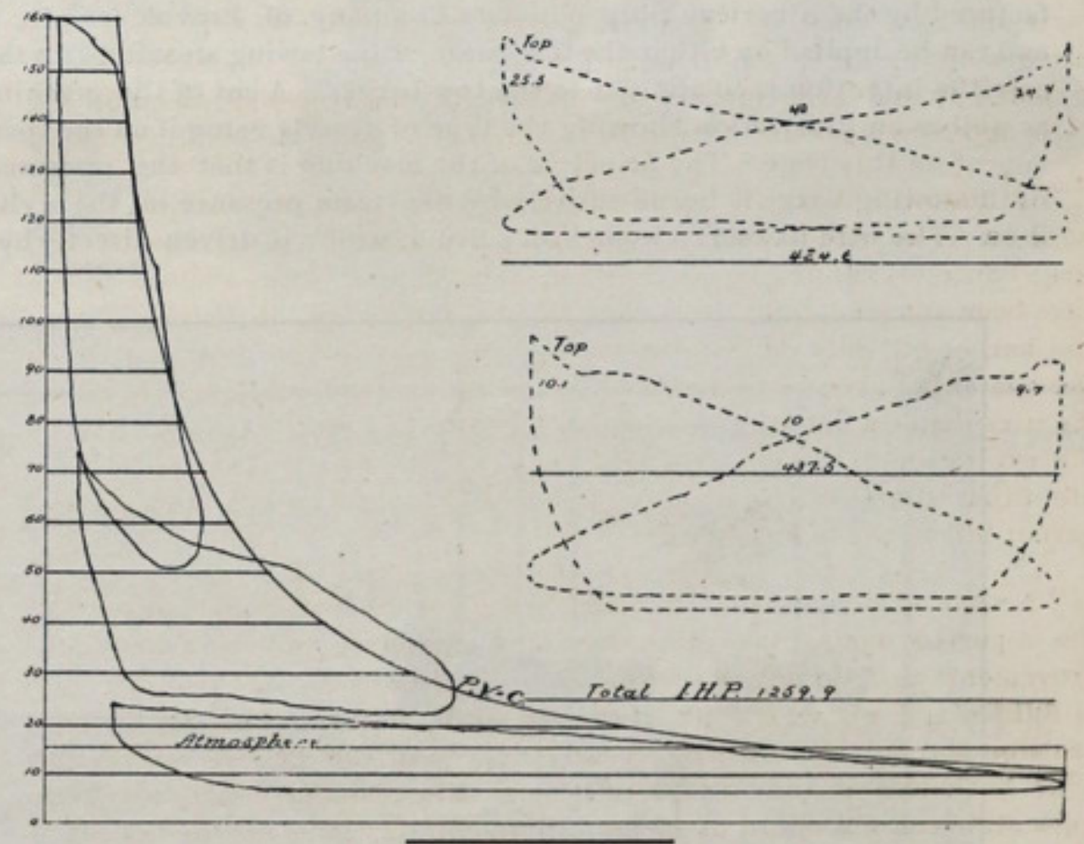



### Cards '19

| | | | |
|---|---|---|---|
| Revolutions Per Min. | 81.2 | | |
| Vacuum, | 21" | | |
| Cut off | 6½ | 1½ | 2⅛ |
| Gage Pressures | 159 | 52 | 13 |
| Range in Temp. | 826° | 744° | 641° |



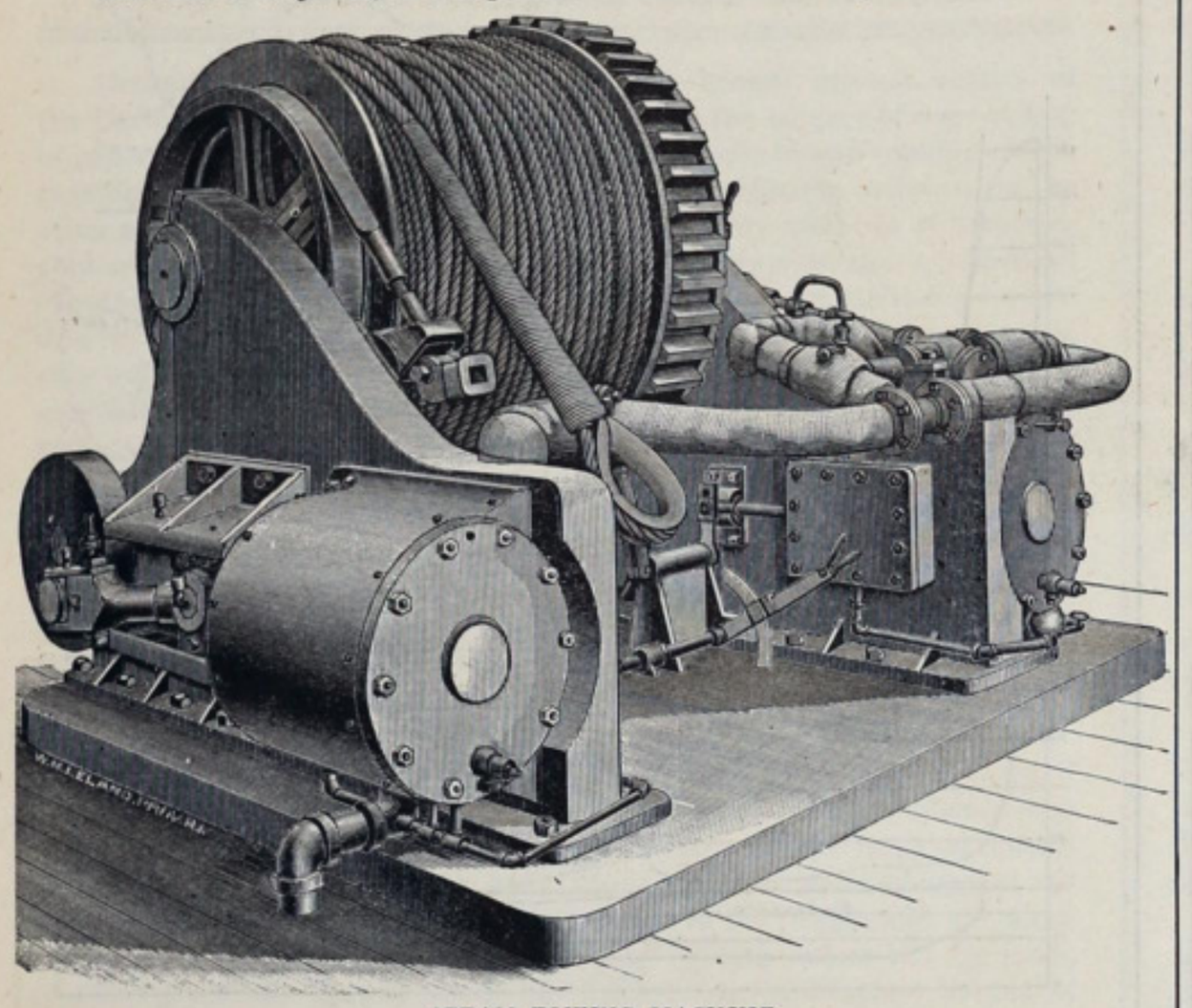

I.H.P. 387.8




In view of delays experienced at the St. Mary's Falls canal and the probability of more unfavorable weather in September, a day is to be added to the time schedule of the passenger steamer North West, and she will hereafter leave Buffalo on Tuesday evening as usual but will not arrive at that port on her return until Tuesday instead of Monday morning.

## Tow Barges in the Iron Ore and Coal Trade.

The action of the Minnesota Steamship Company in giving a contract to the Chicago Ship Building Company for two steel tow barges, to be engaged with its steamers in the ore trade, has again directed attention to the question of economy in tows as against fast running steamers. There are various conditions to be taken into account in considering this problem, especially in the lake trade, where delay in port with a vessel of any kind is to be avoided at all times. The Minnesota company, with its large fleet of steamers to care for the barges, and with shore connections that insure dispatch, is in a position to reach some important conclusions



STEAM TOWING MACHINE.

in this matter, and it is evident from the equipment to be given to the barges that the trial of them will be under the best of conditions.

Regarding the proposed adoption of steam towing machines on the barges, Mr. H. G Dalton says that officers of the Boston Tow Boat Company, who are using the machine in large vessels on the Atlantic coast, say that as a result of their experience with it they would as leave think of allowing a new vessel to be fitted out without a steam steerer as to omit the towing machine from her equipment. General Manager Babcock of the Chicago Ship Building Company has also investigated the workings of the machine and speaks favorably of its advantages. That a device of this kind is certain to come into general use on the lakes as a result of a successful trial of it, there is no doubt, as the old method of towing with manila hawsers rigidly secured to a towing bit must be considered expensive and behind advancement made in other directions.

The machine which it is intended to fit to these new boats is manufactured by the American Ship Windlass Company of Providence, R. I., and can be applied on either the tow barge or the towing steamer. In this case the intention is to apply it to the tow barges. A cut of the machine, as well as an illustration showing the type of vessels using it on the coast, appear on this page. The principle of the machine is that the resistance of the towing barge is borne entirely by the steam pressure in the cylinders. The wire hawser is wound on a drum, which is driven directly by a pinion gear on the crank shaft of the engines. The machine is fitted with a reducing valve, which enlarges the opening of the valve or decreases the opening, according as the strain increases or decreases. In a sea-way, or when the vessel pays off, increasing the strain on the hawser, the drum begins to revolve, so as to pay out the hawser, and this action opens the reducing valve and increases the pressure in the cylinders, and continues to do this until the pressure is adequate to hold the strain on the hawser; then, if the strain decreases on the hawser, the pressure in the cylinders revolves the drum and winds the hawser in. In this way the machine is prevented from paying out the whole of the hawser and only enough to relieve the strain on the same to prevent its breaking. By this arrangement the hawser is at all times relieved from any sudden strain and the elasticity of the steam furnishes a cushion for the pistons, so that it completely protects the hawser and gives an elasticity without which the same would be disabled in a short time. When the tow barge casts off the hawser, the reducing valve is disconnected and the machine is a simple hoisting drum, and can be started to wind up the slack hawser.

Thus it will be seen that the tow line is not handled at all, as the automatic operation of the machine winds up and pays out the line, without necessity of touching it in any way whatever. In icy weather a manila tow line is a bad thing to handle, and to have to slack up and take it to a steam gypsey or a steam capstan at any time necessitates delay and extra labor, all of which is saved and the work done in a much better manner.

## No Mixture of Money and Friendship.

Capt Chas. G. Penney, U. S. A., who was in charge of the recruiting office in Cleveland for a time and who is now at Pine Ridge Agency, South Dakota, made a number of friends on the lakes through the interest he had taken in ships and ship building. Since removing to South Dakota he has continued a subscription to the REVIEW, and a suggestion that probably he was doing so as a matter of friendship brings out a characteristic note from him. He says. "I have yours acknowledging receipt of my remittance to pay for the REVIEW. I distinctly did not send you the money as a matter of friendship. I never mix up money and friendship. I like the paper, and enjoy very much the information I get from it. I was by birth and inclination a sailor-man, and only adverse circumstances have made me a 'sojer.'"

The August number of the Penberthy Injector Company's Bulletin contains a dozen or more short articles on subjects interesting to working engineers, which are selected from the best technical publications.

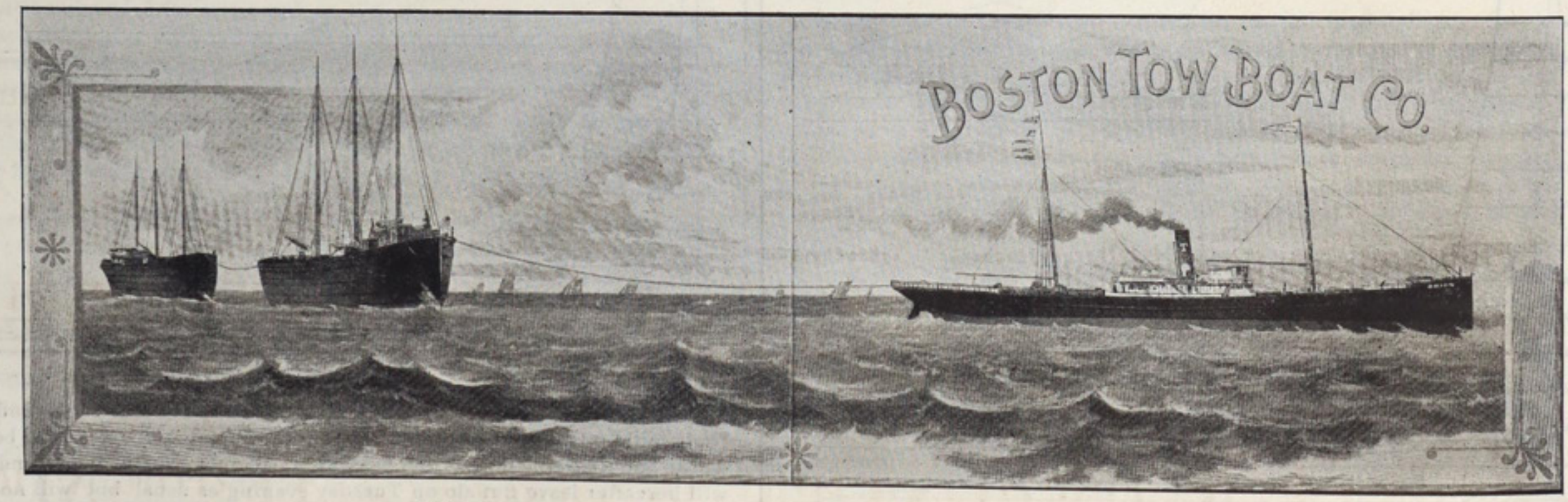
"SUMMER TOURS—The Nickel Plate road has placed on sale a complete line of tourist tickets to the resorts of the east, including Niagara Falls, One Thousand Islands, lower Canada, the Atlantic coast and the mountains of New York and New England. Address B. F. Horner, general passenger agent, Cleveland, O., for descriptive matter and full information. Aug 30

U. S. ENGINEER OFFICE, 34 West Congress street, Detroit, Mich., August 6, 1894. Sealed proposal for Operating Machinery for the 800-foot Lock, St. Mary's Falls Canal, will be received here until 2 p. m., September 5, 1894, and then publicly opened. All information furnished on application.

O. M. POE,
Col. Corps of Engineers.

**Wanted.** ...TO BUY A TUG FOR SPOT CASH,

Not less than 20 square nor more than 22. Address "Steam Tug," care MARINE REVIEW, giving full description, age, size, etc., with lowest price for spot cash.




BOATS OF BOSTON TOW BOAT COMPANY USING STEAM TOWING MACHINE.

# GARLOCK PACKINGS.

Our Elastic Ring, Sectional, Spiral and Special Water Packings are the leaders in this line. For Steam, Water, Ammonia, High Speed Work and all places where packings are used they excel. Try our Special Water Packing, fully guaranteed for water end of pumps. See that our trade mark is on each package. Correspondence solicited.

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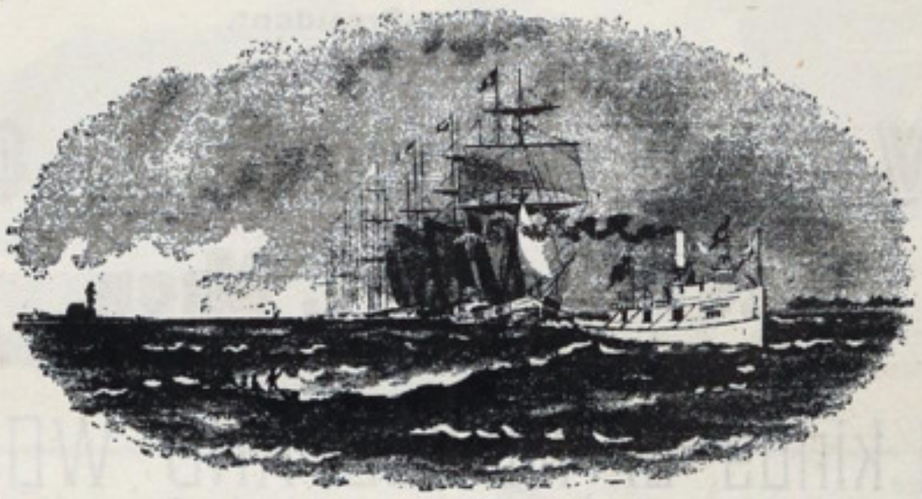

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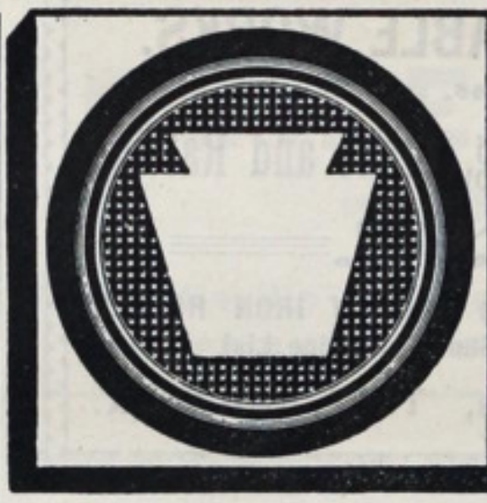

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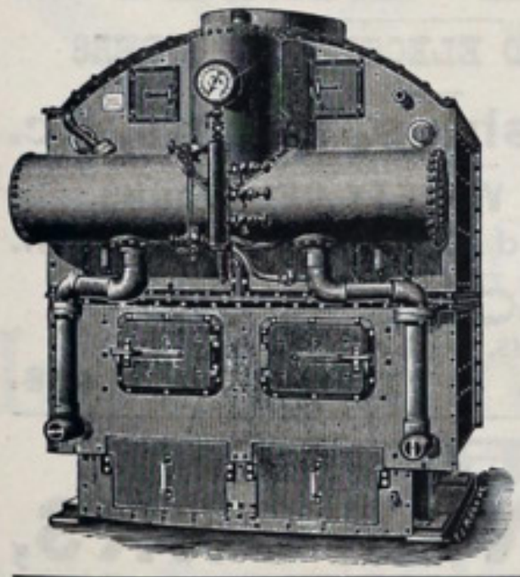

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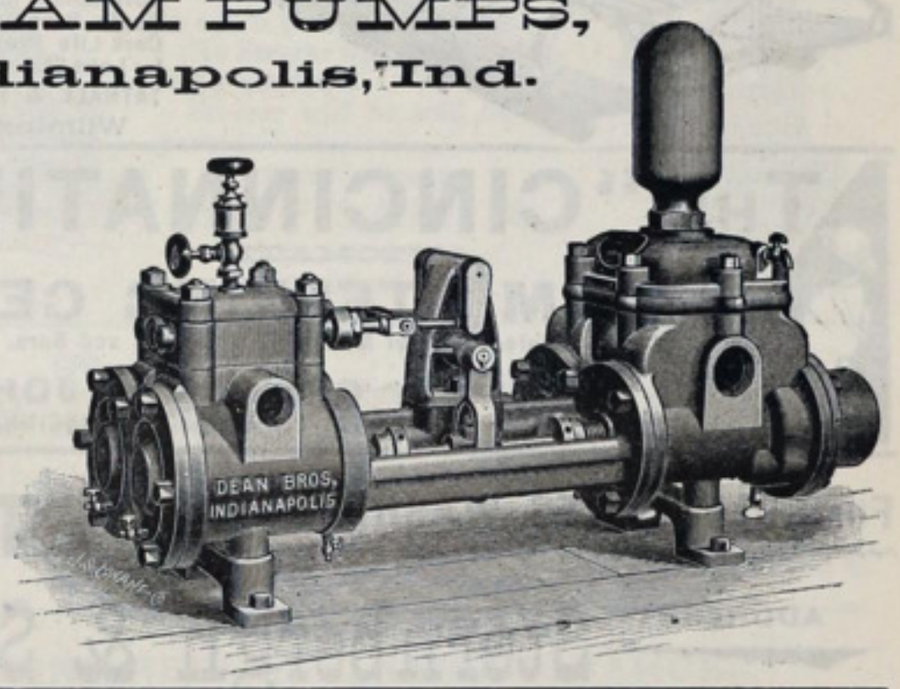


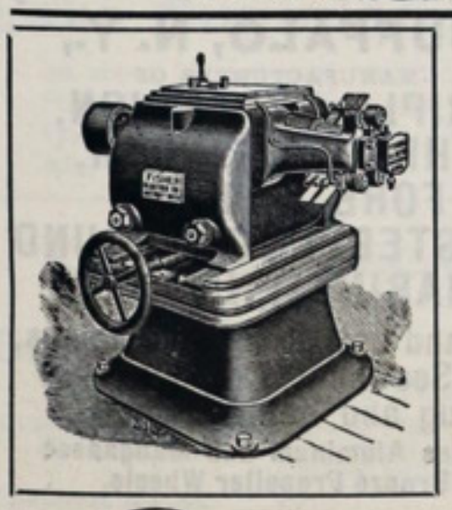

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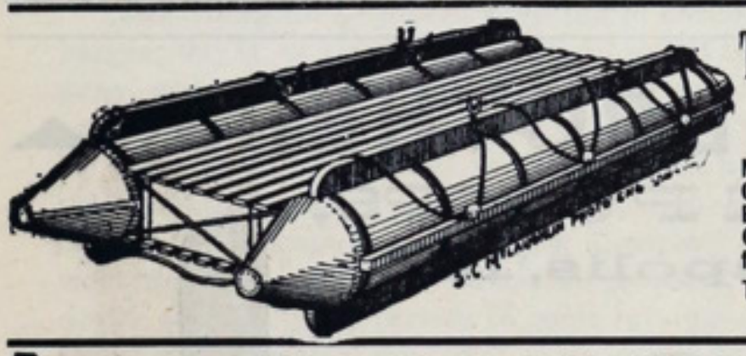

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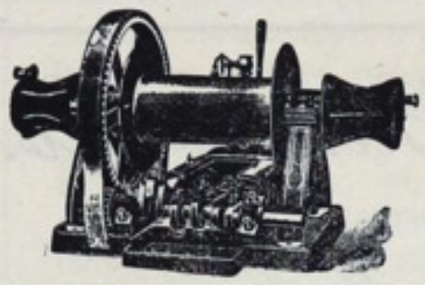

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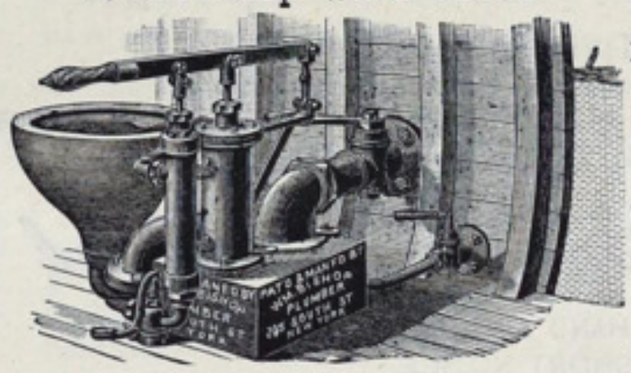

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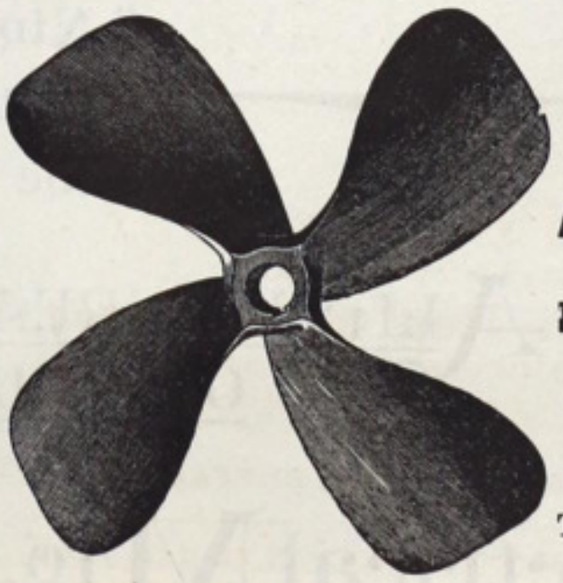

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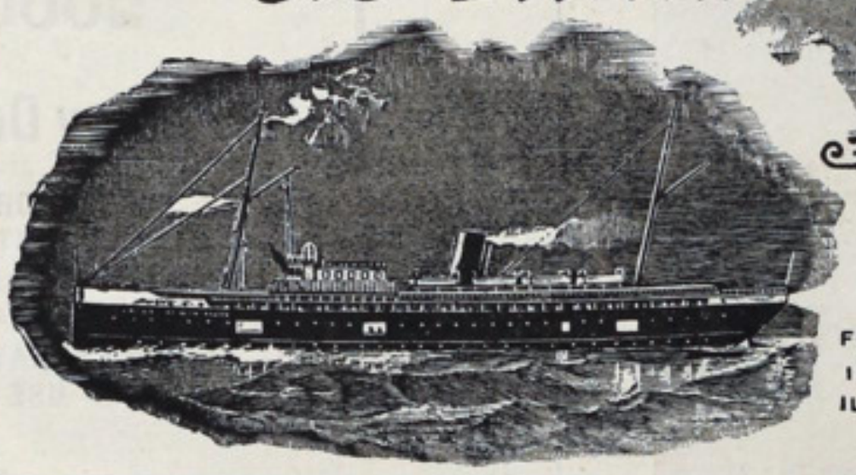

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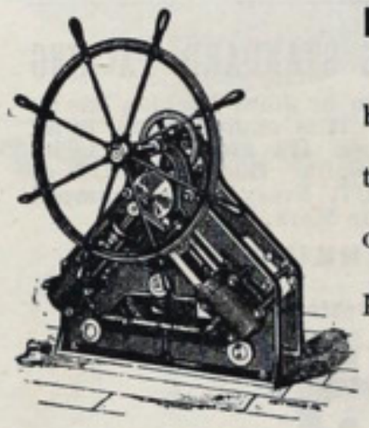

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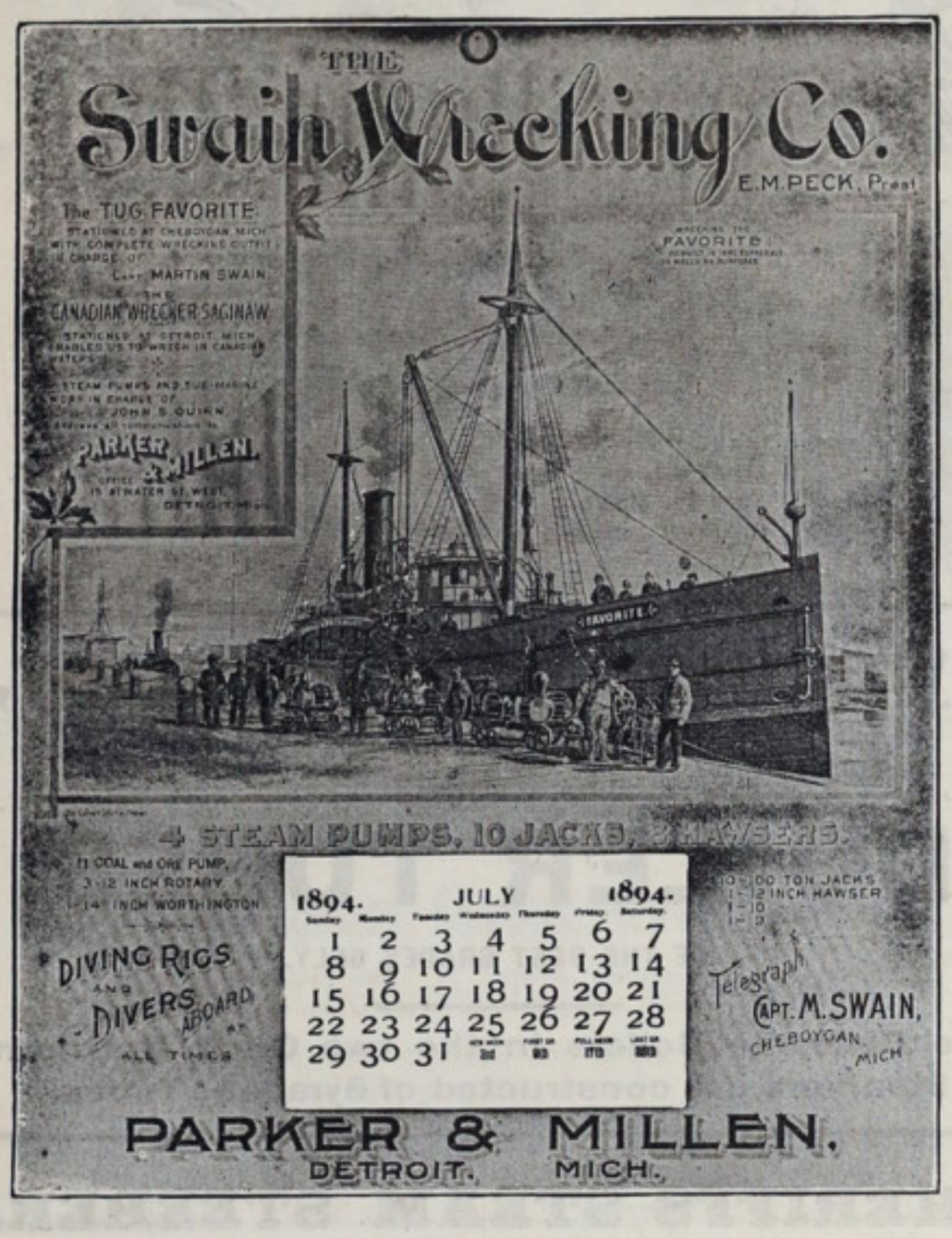


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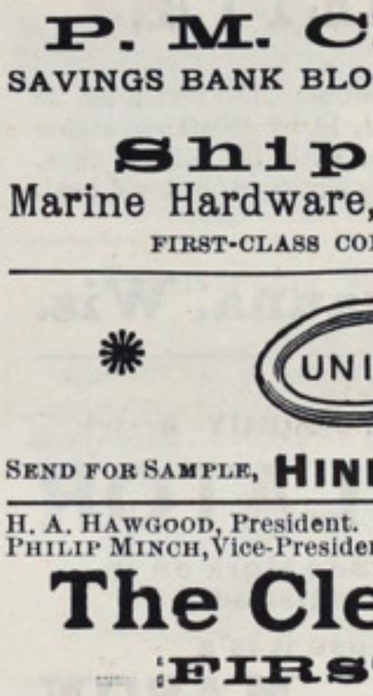


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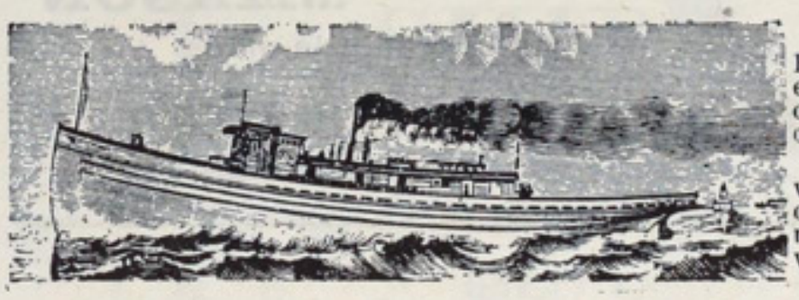

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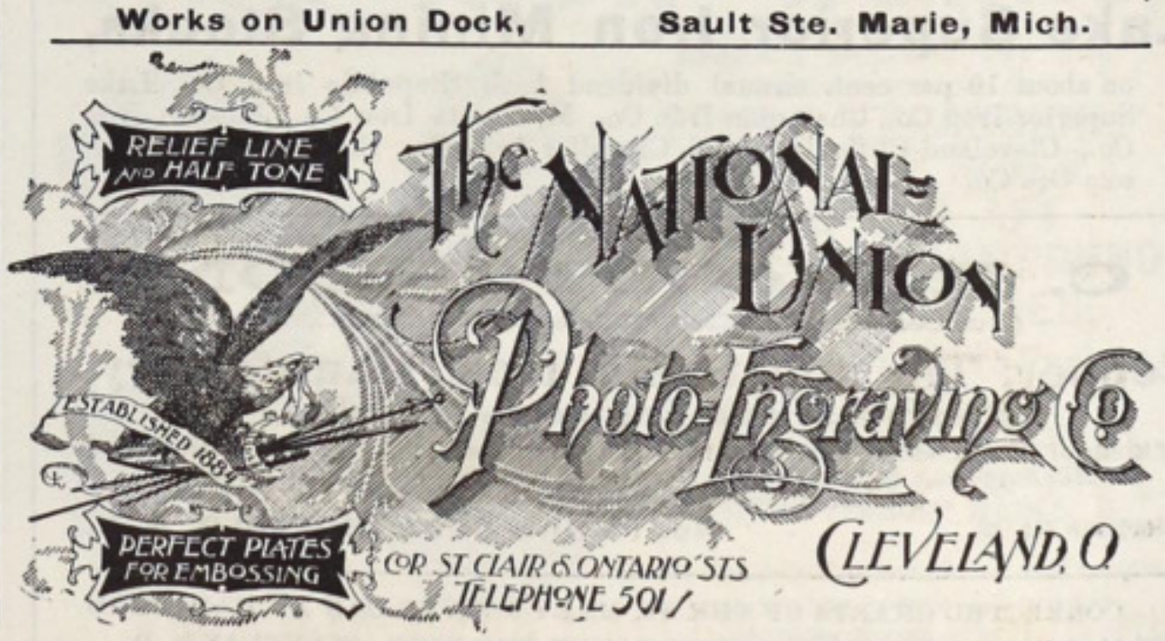

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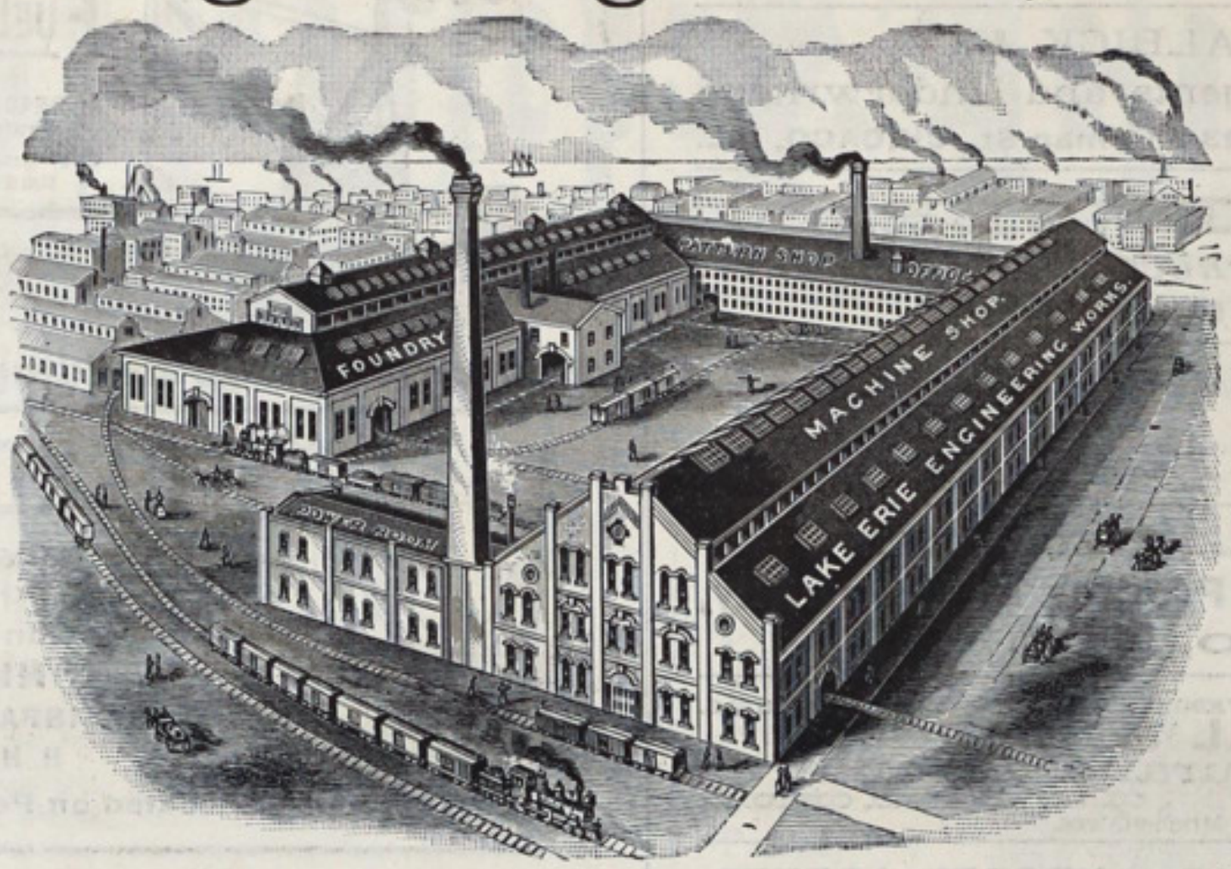


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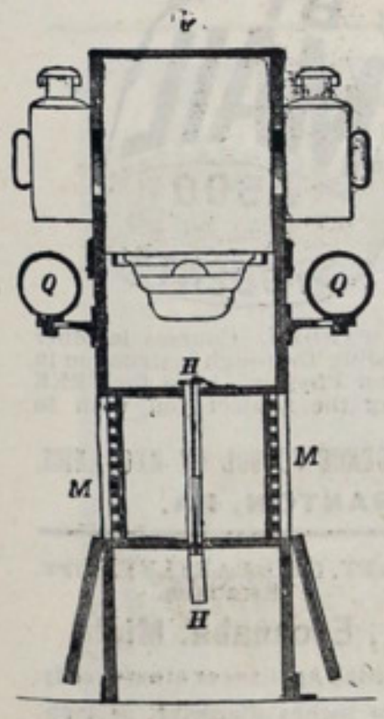


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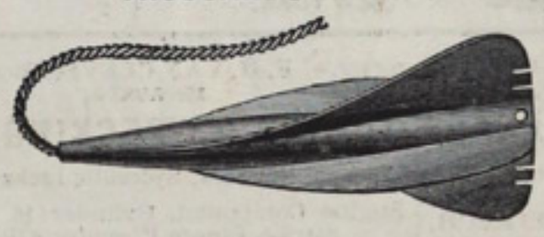

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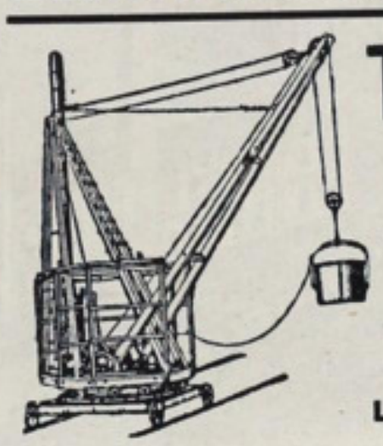

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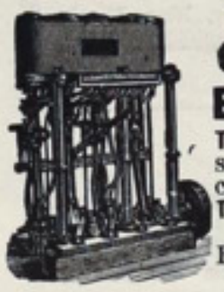

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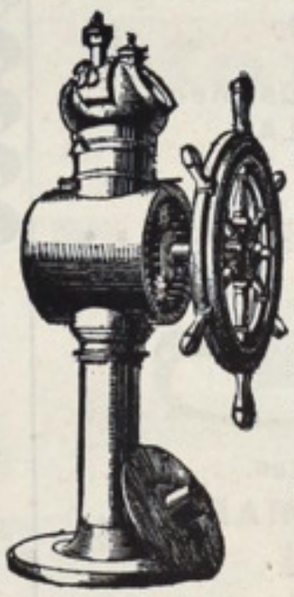

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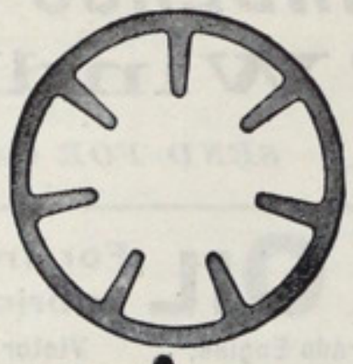

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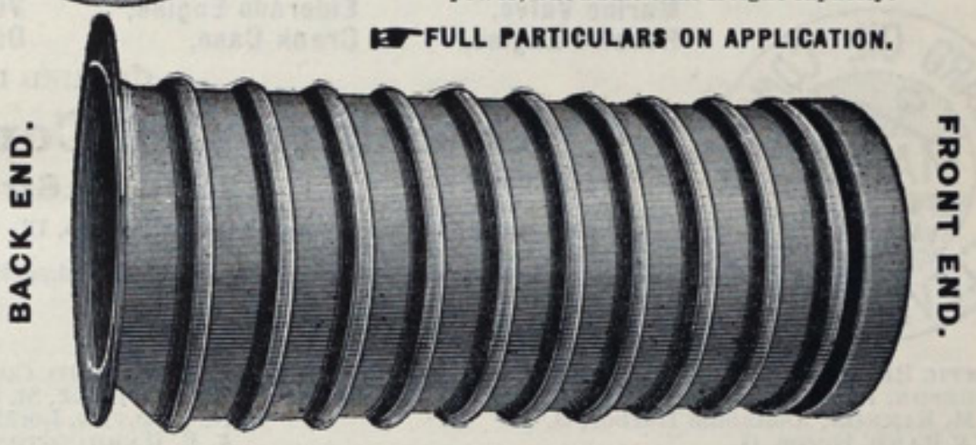


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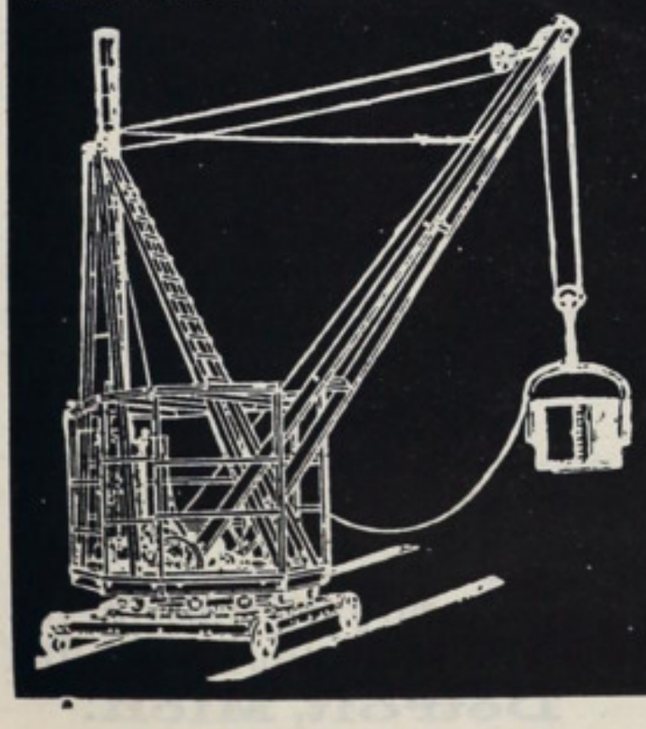

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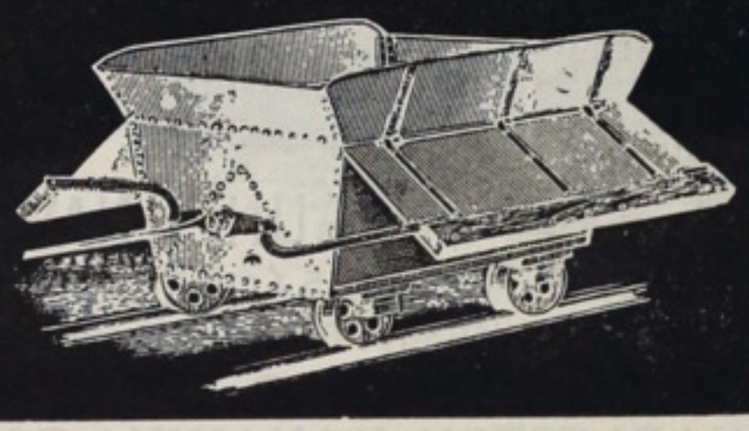

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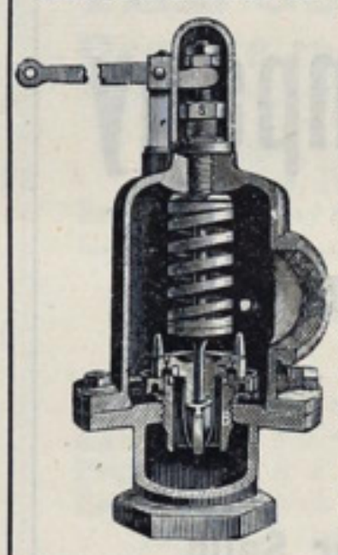

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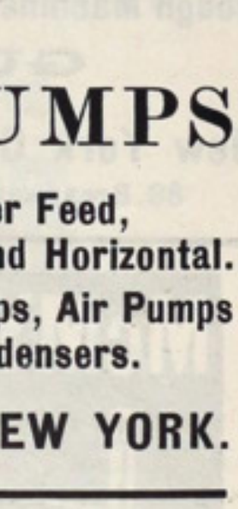

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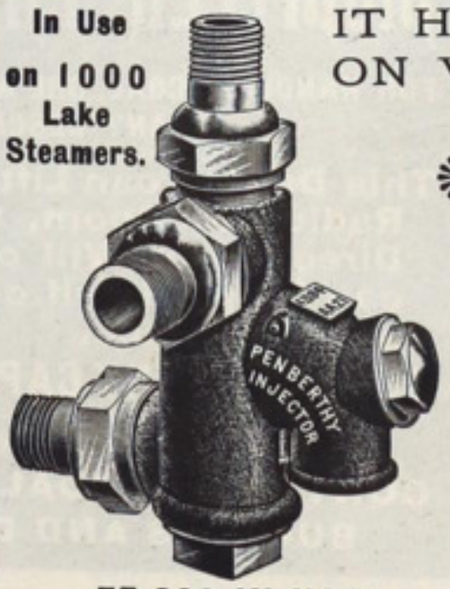


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